Effective program filing! Jetleys 01-677 3823 WE GIVE AWAY GOOD IDEAS.

ComputerWeekly

Thursday, July 8, 1982

SIEMENS Ink-Jet printing for OEM and end-users Tel. 09327 85691 Ext. 134 & 135

CII-HB chief 'furious' at £8.5m payment

by Jack Gea

CII-HONEYWELL BULL is off to a demoralising start under French government control, by paying £8.5 million more than it needed to acquire 27.1 per cent of US Honeywell's stake in its equity.

The mis-spent surplus represents the extra cost to CII-HB on the exchange market of the $150 million paid for the Honeywell shares. CII-HB waited until only a few days before the June 25 deadline under the agreement between the holding company Machines Bull and the American firm.

Newly-appointed chairman Jacques Stern is reported to be furious that French Treasury officials, who were well aware of the government's intention to devalue the Franc, failed to make the payment until after the change in the French currency's parity.

Agreement on a payment of $150 million had been reached two months ago and the decision to buy 27.1 per cent of Honeywell's stake was reached on May 28.

The postponement of payment until the middle of June meant that CII-Honeywell Bull paid FFr1,020 million at FFr6.80 to the dollar instead of FFr915 million at FFr6.10 to the dollar.

The difference of FFr105 million is sorely needed by Machines Bull for CII-Honeywell Bull, its 80 per cent-owned subsidiary, which is seriously under-capitalised.

Stern has set the firm's cash needs at FFr two billion (£160 million).

Members of Stern's staff and officials at the Ministry of Industry are blaming Treasury officials for red tape procedures in failing to cover the dollar purchase. But the Treasury is saying that CII-Honeywell Bull failed to prepare the transfer of funds in good time.

A new key appointment at CII-Honeywell Bull is that of Francis Lorentz, a 40-year-old senior civil servant, as joint general manager, in a triumvirate with Maxime Bonnet and Andre Rivière.

Lorentz, who moves into his job in September, has been responsible for strategic industrial planning as head of Codis, a State body responsible for the development of major industries.

Lorentz played an important role as the government's representative during the negotiations for the nationalisation of Thomson-Brandt, the leading French electronics and electrical group.

BOGOD . . . "One can find reasons not to supply skills to any country."

Policy on human rights comes under fire

by Boris Sedacca

THE issue of human rights violations and the supply of sophisticated computer systems to repressive regimes has erupted again.

The UK Council for Computing Development has come under fire this week for sending advisers to countries which have "an appalling record for their lack of human rights" (see Letters, page 9).

"This does not surprise me," added one senior industry source close to the UKCCD. "I do not like the way they select their consultants – it is a bit of a club.

"I am not happy myself about the types of projects which they are taking on and I do not feel they are beneficial to the people of those countries, most of which could do with basic training in minicomputers and business skills, not grandiose scientific projects."

Doug Eyeions, director-general of the Computing Services Association, which has recently joined the UKCCD, responded: "There is a counter-argument to the effect that the use of intermediate technology only results in keeping a country backward, but I do not want to come down on either side of the debate.

"As far as the CSA is concerned, if the government of a country says it wants to keep a project labour-intensive, we will do it that way. It is up to that government to decide on its requirements."

Julian Bogod, director of the UKCCD, explained that the posts which his organisation is seeking to fill are all sponsored and managed by the relevant United Nations organisations and other international aid organisations.

The UN circulates job descriptions to national bodies such as our own Commonwealth Office and International Recruitment Unit, which will keep files of individual specialists and consultants in various fields such as hydroelectric dam construction or irrigation. The UKCCD acts as agent of the International Recruitment Unit for computing specialists.

Bogod added: "Should we refuse help to countries whose politics we do not agree with, or do we decide not to supply skills into certain applications? As far as Turkey is concerned, we will supply that country as long as we have normal diplomatic relations with them. One can find reasons not to supply skills to any country."

Itel leasing claims settled by Lloyd's

by Maggie McLeaing

LLOYD'S insurance underwriters has finally settled computer leasing claims which came out of the crash of Itel Corp. Lloyd's has paid out a "final" $4 million, which is only a fraction of what was the highest claim in its 300-year history.

But the settlement may not be the end of the story. Two further legal actions brought against Lloyd's by computer leasing companies are due to be heard in the US within the coming year, and the amount involved in one of these cases is over $600 million.

Itel Corp, once a leading maker of IBM plug-compatible mainframes, filed for bankruptcy in January 1981, declaring debts of $1.6 million, and assets valued at $1.1 billion. The company had suffered a serious blow when IBM introduced its 4300 series of medium-sized mainframes in 1979, rendering its own stock of IBM mainframes obsolete.

After Itel's spectacular crash over 14,000 claims flooded into the market, and a total of $120 million has now been paid in insurance claims, about 25% of total computer leasing business accepted by underwriters.

In addition to Lloyd's $4 million, $2 million has been released from an escrow account, and Lloyd's has withdrawn its counter-claim against Itel for $100 million.

One of the reasons for the enormity of the loss is that underwriters did not take into account the speed with which current technology becomes outdated.

WELLS . . . Spotted loophole.

DoI software scheme has 'free labour' flaw

by Maggie McLealng

A LOOPHOLE in the revamped Software Products Scheme may allow software houses to recoup total labour costs of development from the Department of Industry.

Applicants for a share of the DoI's £10 million funding have to submit a proposal for their project, estimating costs of all resources involved. Labour charges have to be entered in terms of a manpower rate, which may be based on the rate at which the programmer or analyst would be charged out to another company, and not merely the salary figure companies pay their staff.

This loophole was spotted by Bill Wells, director of ExportIT, the organisation funded by the DoI to promote export of British software and to help establish overseas contacts in the industry.

"Some of these companies charge about three times what the programmer is actually paid as a charge-out rate, so that if the company gets a grant of one-third of the cost they are getting the labour for nothing," he pointed out.

David Else, National Computing Centre manager of the scheme, is adamant that this is not how it is intended to work.

"Companies are allowed to base the calculation on the actual cost of employing staff, but not to include any profit factor in the figure," he said.

There will be a tenuous link between the Software Products Scheme and ExportIT, as applicants for development grants are expected to show that projects have export potential, and advice may be given to them by members of the ExportIT department.

Hitachi denies spy charges

HITACHI, the Japanese computer giant, was last week indicted by a US Federal Grand Jury, for conspiracy to transport stolen IBM secrets to Japan.

But the company, which could stand in the dock with 14 of its employees, has denied that it or its staff have engaged in illegal activities and has advised its staff not to return to the US for trial.

The company admits spending $546,000 to buy information. Charges against executives of Mitsubishi, another Japanese electronics giant, were postponed and NAS has dismissed its two employees involved in the case.

How to make it big in small business computers

And...sell a system that delivers!

Master Distributorships available in Europe, Africa & Middle East

Are you running an information processing-related business with strong software capabilities built around an aggressive marketing program?

You could be selling the world's first fully integrated desktop computer system — now with Winchester disk — which offers you one of the best profit margins in the business. The new 900 series offers powerful business computing with a keyboard, printer, CRT & disk drives built into a system not much larger than a typewriter and supported by a Durango software, both standard & custom.

You'll be selling a product with high volume potential, top price performance and large capacity right here in the market you know best & where you're already a proven marketeer.

OPENINGS ARE AVAILABLE RIGHT NOW

to qualified firms to represent us in your marketplace. Write, call or telex Robert M. Lefkowitz, International Sales Manager, 3003 North First St., San Jose, CA 95134. U.S.A. (408) 946-5000. TELEX: 352-088.

Durango

Computer financing

Standbrook House, 2-5 Old Bond Street London W1X 3TB

EARLY DELIVERIES

Call us for schedule dates 3083 – E16 3083 – B16 3083 – J24

CENTRONICS IBM Diablo olivetti Hazeltine Texas Instruments

TERMINAL CHOICE

DEC SALE

DEC VT100AB £895

LA120RA £1230

LA120GA £1275

LA34AA £525

Prices include delivery, warranty, interface cable etc. Offer ends 14th July 1982

RAIR 01-836 6921 6-9 Upper St. Martin's Lane London WC2H 9EQ

Printed in Great Britain by QB Limited, Sheepen Place, Colchester. Published by IPC Electrical-Electronic Press Ltd, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

PASCAL/MT+86 by DIGITAL RESEARCH from vector 51-53 THE PANTILES TUNBRIDGE WELLS KENT, TN2 5TH Phone: 0892/45285 Telex: 95441

ComputerWeekly

Thursday, July 15, 1982 Number 817 30p

'82. A great year for PT7. PT7 THE ADVANCED FEATURE TERMINAL FOR ICL AND IBM FERRANTI Computer Systems

£16 million office automation project

ICL staff move into the future

by Claire Gooding

ICL is to practice what it preaches by spending 8% of its total annual payroll, amounting to £16 million, in automating itself, managing director Robb Wilmot has revealed.

By this time next year 80% of ICL's professional staff should be using the hardware, software and automation techniques which ICL is trying to sell to others.

Already ICL has invested in 12 2966 mainframes worth £5½ million for internal use, and Wilmot is planning further capital investment on office automation.

Plans are under way to install the entire range of ICL kit including DRS20 workstations and 8801 word processing equipment.

CAFS, the fast retrieval and data matching tool, will also play a part in the ICL internal workings. CAFS is thought to be only nine months away from release as a commercial tool running under the large-end operating system VME 2900.

The most surprising element of ICL's self-automation is that it has not been done before. Wilmot revealed his plans at a conference held by ICL to launch two productivity tools for the mainframe environment.

ICL's new products are part of the push to increase productivity by making the VME operating system a vehicle for a number of high-level tools. The first announcement was for a teleprocessing builder, TP Easybuild, linked closely to the Data Dictionary, which enables users to create their own screen formats. It joins Report Master and Query Master, already in the pipeline as part of ICL's Rapid Applications Development System.

The second, more far-reaching announcement was ICL's first Applications Blueprint. The idea of the blueprint programs is to provide a framework of re-usable systems analysis and software, based on the Data Dictionary, with the aim of cutting applications development time by 90%. The first, a personnel system, is due out in September.

ICL is to use the methodology itself, and estimates that it will cut development lead times down to six weeks.

Wilmot himself plans to have a terminal on the desk by 1983. He plans to give ICL designers their own Perq workstations, and give managerial and clerical staff access to such tools as DRS20s and 8801 word processors.

Fisher of SPL, Feigenbaum of Stanford University, and Harris of Artificial Intelligence at Fifth Generation Conference in London. Conference reports – pages 5/7.

VLSI changes threaten the computer giants

by Hedley Voysey

THE speed of the changes in advanced design with VLSI (very large scale integration) chips is a threat to major electronics companies such as Siemens, GEC, Hewlett-Packard and others.

For thousands of engineers trained in earlier circuit technologies, representing the majority of the experienced technicians with the large companies, the best design tools and aids are out of their intellectual reach.

Last week Egon Hoerbst of German electronics giant Siemens made a plea for such engineers at one of the two conferences held in the UK to consider the computer's future – the Fifth Generation Conference, held in London, and the International Workshop on Silicon Compilation (VLSI), held in Edinburgh.

He asked the frontier-pushing engineers to remember that tools for the old style of gate array methods will be needed for some time to come.

The problem arises because many engineers have been trained in early circuit design methods, where a design is imposed on a basically performed set of cells by final layers of metal connection. Inefficiencies in this approach have caused advanced research workers to move on to other techniques beyond the skills of most engineers.

Hoerbst said: "Thousands of good, but not super-skilled, engineers know our systems best. The chips will be needed in volumes that are relatively small. They need good aids to designing in gate arrays, so please do something for them."

The response from Howard Shrobe of the Massachusetts Institute of Technology was that "what you want is reasonable but not the job of research institutes."

Curiously, Edinburgh University itself may be able to satisfy both the "go-faster" brigade and the industrialists. Lattice Logic, an Edinburgh-based firm headed by John Gray of the University, is able to supply design aids to support gate array implementations.

At the same time there are developments in the University which use other technologies supported by silicon compiler approaches where the starting point is some functional description and the end point is mask design.

NEWS BRIEF

Motorola settles in 'secrets' case

MOTOROLA has settled a claim against three ex-employees for misappropriating confidential company information and technology. The three, and their company, Computer Displays International, agreed to pay $200,000.

An accompanying federal court order prohibits the three from using proprietary Motorola information or trying to hire Motorola employees, and requires them to allow Motorola to examine the next generation of CRT display products to ensure it does not use Motorola trade secrets.

Schools scheme

PERSEVERANCE by top selling British microcomputer maker Sinclair has paid off. The Department of Industry's Micros in Schools Scheme is expected to be extended this week to primary schools, and with it the addition of the Sinclair Spectrum to the list of machines eligible for a 50% subsidy.

ITT buy-out

THE French government has bought out ITT's telecommunications operation in France for $50 million. The settlement takes ITT out of the French market, though it had hoped to sell only 51% of its operations. ITT is reported to have sought $375 million.

Burroughs suit

A BURROUGHS spokesman in the US last week said that the company was negotiating a settlement in the $160 million suit brought against it in May by the Medical College of Wisconsin over the supply of a system. But on this side of the Atlantic, it is Burroughs that is taking potential customers to court: Report page 2.

Cross joins OTL for attack on US market

by Kevan Pearson

EX-ICL supremo Geoff Cross is to join forces with UK office automation company Office Technology Ltd in its bid to capture a slice of the lucrative US market.

The appointment of Cross as a non-executive director is a major coup for OTL, part of the Information Technology group.

Cross has extensive experience in the US office automation market from his three years as president of AB Dick, which he purchased for General Electric Company (GEC) in 1977. He left AB Dick in May to pursue his personal business interests, and will now devote part of his time to OTL.

The company has recently turned its attention to the US and has demonstrated its IMP, integrated voice and text system, to several major office automation and computer companies in the US.

Spud Taylor, OTL managing director, says he expects Cross to act at a "senior level" in negotiations with potential partners, and to seek out product and market opportunities for OTL directly.

The company is exploring several different avenues of participation in the US market, according to Taylor. It has recently concluded a deal with Nixdorf, the West German computer manufacturer, to manufacture and distribute the system in Europe, and is considering a similar arrangement with a major office automation or computer manufacturer in the US.

CROSS. . . . To act at senior level in negotiations.

Taylor says he approached Cross as soon as he announced that he was leaving AB Dick.

Cross' experience in the computer industry is extensive. He joined ICL in 1972, from Sperry Univac, and was responsible for the purchase by ICL of Singer Business Systems. He left ICL in 1977 to return to the US.

GEC boss bids for stake in AEG

by Kevan Pearson

THE future of ailing German electronic giant AEG-Telefunken was still uncertain early this week after a flying visit by GEC chairman Lord Weinstock and high level meetings of the German government.

Lord Weinstock flew to Frankfurt late last week to attempt to win over the German unions to a £175 million stake in a stripped down AEG. The meetings were not a conspicuous success, although GEC remains interested in taking a 40% share in a possible new AEG subsidiary.

The West German Cabinet was expected to meet yesterday to decide on an interim solution to AEG's severe financial problems.

Select your terminals Select your terms

Then select a number to your local branch London 01-961 8777

The TOTAL Answer HAMILTON

INSIDE THIS WEEK'S ISSUE

Burroughs takes ICL contract to EEC 2
IBM ban on order switching 3
ICL unions accept 5% pay offer 4
Fifth Generation conference 5/7
Software Month on payroll systems 21/24
Viewdata winner 2
Apple cuts dealer list 3
Sir Michael for Mercury 4
Software File 8
Company News 9
Micro News 10
Data protection 13
Gilb's Mythodology 14
Downtime by Chad 14
Letters 15
Op Spot 16
Programmers Page 17
Puzzler 17
People/Diary 18
Products 19
Books 20
Marketplace 26/27
Sales Bit 47
Jobs: Pages 28/47

Burroughs appeals to EEC over ICL £500,000 contract

by Kevan Pearson

BURROUGHS is to launch a three-prong attack on a recent decision by Oxfordshire Regional Health Authority to award a £500,000 contract to ICL. The company plans to take the case to the EEC, as well as following it up on two fronts in the UK.

The case is being taken to the EEC under a ruling made in 1980 about preferential procurement in public sector contracts. It will be the first time the rule has been invoked against a computer manufacturer.

The other two actions are an appeal against a High Court decision not to grant an injunction against the contract's fulfilment, and a full High Court case claiming damages for a wrongful decisioo.

Burroughs applied for an injunction on the grounds that the Authority has awarded the contract contrary to the instructions it had given to potential tenderers. Based on the criteria laid down in the instructions, the Burroughs' tender came out top, a Burroughs' spokesman said. However, after a short delay the contract was awarded to ICL.

The judge refused to grant the injunction oo four grounds: it would be extremely difficult to decide where a breacb of such an injunction had occurred; damages resulting from a full High Court action would be a sufficient remedy without stopping the contract; the urgency with which the contract must be fulfilled; and the difficulty in assessing the cost of delay and the consequential damages payable to Oxford Regional Health Authority if Burroughs lost the case.

Burroughs intends to appeal against the decision not to grant an injunctioo and to claim damages in a full High Court action. Several other computer companies will be watching the outcome of the actioo with interest, both io the European courts and in the UK.

IBM has recently taken action against the Severn-Trent Water Authority over the awarding of a contract to ICL and the case will be heard at the end of July. The company is taking a more oblique view. It is seeking a judicial review of the way the Authority reached its decision, and is believed to be seeking an injunction against the fulfilment of the contract, and damages.

Sperry Univac is waiting in the wings and, pending the outcome of the IBM case, will itself decide whether to enter the fray.

These cases represent the culmination of a long-term anger by US-based manufacturers against the preferential procurement policy which had operated in the UK in ICL's favour until the EEC decision in 1980.

IBM campaigned vigorously against the PAYE contract being awarded to ICL, and took the unprecedented step of issuing a statement attacking the decision. The preaent actiona result almost ditectly from the EEC decision.

While the cases reflect the general principle of public procuremeot, and are hardly significant in material terms, the Burroughs case is more serious than the others because the initial computer project is likely to be repeated several times over within the Oxford health region. And it is almost certain that the authority would decide to go for compatible systems in all the other sites.

However, it is the general principle which will be tested by the EEC case, and it is this aspect which will attract the closest scrutiny from other overseas suppliers.

Mike Challinor (right) with Dave Olivey, Baric viewdata services manage. Atop the system is Challinor's Champagne prize.

British Telecom turnover takes off — and service companies seek a share

by Donald Kennett

BRITISH TELECOM last week announced soaring profits and turnover as computer services companies waited to see the details of how they can get in on the act.

Sir George Jeffersoo, BT chairman, unveiled a package of price changes that will add an average of 3.3% to all telephone bills in November and revealed that he expected to report a profit of £450 million for 1981-2. He did not include an estimate for revenue but it is believed to have leapt by a staggering 33% to almost £6 billion, up from £4.5 billion last year.

And this week the draft of a general licence for value-added network services (VANS) is to be circulated for comment by the Department of Iodustry.

Circulation of the document coincides with a DoI seminar yesterday (Wednesday) to review progress in the liberalisation of telecommunications and delegates are expected to tell the DoI they are unhappy with the rate of progresa.

The licence when issued in its final form will allow companies to market services such as electronic mailboxes on British Telecom's networks without applying for special permission.

Anxiety has arisen that the terms of the licence may oeither be free enough to encourage the fullest possible development of this new industry nor clear enough to prevent some new services from being challenged in the courts.

The licensing of VANS has been the responsibility of the DoI since April 1 under the provisions of last year's British Telecommunications Act as implemeoted by the government. The DoI took over responsibility for general licences from British Telecom at the same time and is believed to have decided that a general licence would be more appropriate than specific licences for individual VANS after it was approached by 30 companies wanting to market such services.

Yesterday's seminar was due to be attended by members of the DoI's consultative committee on telecommunicatioos, which was recruited from representatives of equipment suppliers, users and computing service companies to advise the DoI during liberalisation. It is to them that the draft general licence will be circulated.

'Phone me' frame a viewdata winner

by Robert Parry

VIEWDATA systems designer Mike Challinor has struck lucky for a second time with a Prestel message frame design. Last week he won a Champagne prize from British Telecom for his "phone me" frame design for the Prestel Mailbox service, which lets users send messages to each other.

Challinor, who does most of the graphics for ICL bureau Baric's viewdata service, won the award for a Prestel response frame which flashes the words "phone" and "me" alternately, while displaying the name and telephone number of the sender.

Last year he won an award for a Royal Wedding frame.

The demand for informatioo carrying graphics means that new ways are always being sought to use Prestel's rather limited graphics, says Challinor. He mostly designs company logos for customers outside Baric, but has done fine art graphics.

Some rarely see the light of day — done more as exercises to explore techniques — but others appear in the Baric Gallery.

"The alternate flashing of two words is not particularly difficult," says Challinor, "but it does require a bit of planning." He warns that flashing characters can be disturbing, and distract people from other information on the screen.

He sees his frame, which comes up when a user receiving a message keys into the service, as an "urgent phone me" rather than a "please phone me".

BIS group sales leap 64% to over £14 million

by Nicholas Eoticknap

SOFTWARE and services house BIS has bought its way to soaring profits.

Trading figures that will make most aervices companies turn green with eovy have been released by the BIS group for the year ended last February. Turnover has leapt by 64 per cent to just over £14 million, with pre-tax profits rising by 41 per cent to £1.4 million.

Group chairman Brian Allison attributed the sales increase partly to acquisitioos, saying that real growth excluding this factor was around 40 per cent.

Comparing his results with published DoI figures for the services industry as a whole, he estimated that his company was growing almost exactly three times as fast.

Breaking down the figures into the group's constituent parts, BIS Software accounted for sales of £5.7 milloo, and BIS Applied Systems (the consultancy and training operation) pulled in £3.3 million, with the remaining £5 million coming from marketing and market research activities.

The export performance of BIS Software was officially recognised with a Queens Award for Export Achievement.

Allison was bullish about the future, saying "I'll be terribly disappointed if we don't top £20 million this year, and make a similar increase in pre-tax. Our first quarter performance has put us well on the way to those targets."

The most important of the acquisitioos Allison referred to was Christian Braun, a direct mail company. BIS already owned a 35 per cent stake, and increased this during the year to 100 per cent.

● The BIS group has taken a controlling interest in electronics consultancy Ian Mackintosh International. BIS, which already held a 49 per cent shareholding, has taken up an option to increase its stake to 76 percent. The deal will sdd about £1.5 million to the group's turnover.

More features lower prices

PT-100B Terminal

- Full VT-100* emulation
- Printer port and advanced video
- Optional graphics facility
- Amber screen (B/W, green optional)
- Comprehensive after-sales service

*Registered trademark of Digital Equipment Corp.

Ask us about quantity discounts and distributorships.

Plessey Peripheral Systems Limited, 3 Harrowden Road Brackmills, Northampton, United Kingdom NN4 0EB. Telephone: Northampton (0604) 65151 Telex: 312254

PLESSEY PERIPHERAL SYSTEMS

ComputerWeekly

Thursday July 15, 1982 Vol 83 No 817

IPC Electrical-Electronic Press Ltd, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telex: 892084 BISPRS G

EDITORIAL

Inquiries: 01-661 8642/8941
Editor David Craver 01-661 3122
Deputy Editor Ron Coates 01-661 3124
Financial Editor Kevin Cahill 01-661 3041
Associate Editor Boris Bedacce 01-661 3052
Software Editor Claire Gooding 01-661 3043
Micro Editor Robert Parry 01-661 3044
Reporters Kevan Pearson 01-661 3042
Donald Kennett 01-661 3048
Philip Hunter 01-661 3051
Andrew Thomas 01-661 3422
Maggie McLaning 01-661 3423
Sarah Hardcastle 01-661 3037
Chief Sub-editor Mike Margles 01-661 3053
Deputy Chief Sub-editor Nancy Pocock 01-661 3045
Sub-editor Julie Cotterill 01-661 3044

DISPLAY ADVERTISING

Advertisement Manager Harry Hutson 01-661 3102
Deputy Advertisement Manager Chris O'Hea 01-661 3125
Sales Executives Philip Bonafont 01-661 3570
Gordon Bradley 01-661 3126
Xanja White 01-661 3071
Software Gordon Bradley 01-661 3126
Manchester Harry Alkin 061-872 5861
Birmingham Ken Parrott 021-356 4838

ADVERTISING PRODUCTION

Display Roger Alburey 01-661 3074
Classified Steve Lever 01-661 3104
Martin Lawrence 01-661 3075

CLASSIFIED ADVERTISING

Group Advertisement Manager Brian Durrant
CONSULTANCIES SALES
Sales Manager Chris Pyne 01-661 0121
Sales Executives Julie Mcinally 01-661 0121
Melanie Lindeman 01-661 0121
DIRECT CLIENT SALES
Telesales Manager Shobhan Gajjar 01-661 0121
Field Sales Executive Michael White 01-661 3468
Sales Executives Neil McDonnell 01-661 0121
Tracey Benstead 01-661 0121
Gillian Clifford-Smith 01-661 0121
Chris Markolewicz 01-661 0121
Dave Lynch 01-661 0121
Heather Phillpott 01-661 0121
John Botting 01-661 0121
Manchester Owen Kelly 061-872 5861
Birmingham Vic Sherer 021-356 4838

CIRCULATION

Terms of circulation control: Computer Weekly is sent free of charge to the following categories in the UK only. Company directors, managers, secretaries; management services executives, chief servants responsible for computing, management/computer consultants, DP managers/supervisors, systems analysts/O&M officers, programmers, operators and computer field engineers.

Subscriptions UK £22; Students £11; US, Canada $33.50, Students $46.50; Europe £27, Students £18.50; Middle East, North Africa (airmail) £52.50; North & South America, Southern Africa, Bonn (airmail) £52; Far East, Australia & New Zealand (airmail) £70.84.

Circulation Dept IPC Business Press (S&O) Ltd, Dunstall House, Ferrymount Road, Haywards Heath, Sussex. Tel: 0444 459188.

Publishing Director Dr I A G Thomas
Editorial Director Chris Howard
Publisher Simon Timbs
Published (weekly) on Thursday, Registered at the Post Office as a newspaper
ISSN 0010-4787
© IPC Business Press plc 1982

BRANCH OFFICES

Birmingham: Lynton House, 202 Walsall Road, Birmingham B42 1BA. 021-356 4838
Manchester: Grove House, Skerton Road, Manchester M16 0WL. 061-872 5861
New York: 205 East 42nd Street, New York, NY 10017. (0101-212) 867 2080

Apple peels 231 names from UK dealer list

by Robert Parry

MICROCOMPUTER manufacturer Apple has axed more than a third of its UK dealers. In the last six weeks 231 names have been dropped from the Apple official dealer list, bringing the number down to 351.

New broom Ksith Hall, sales manager for Apple since late May and previously with Commodore, Apple's main rival for the volume personal computer market, has swept through the dealers in an attempt to improve the quality in terms of customer support.

"I'm not happy," said Hall, "since I'm not in the business of reducing dealer lists. But I am in the business of improving quality."

He feels that UK distribution networks for microcomputers are generally beginning to settle, with manufacturers and distributors taking more care over the people they appoint as dealers.

"They must know and understand computer products and be able to provide a level of software and technical support," comments Hall, echoing sentiments mouthed increasingly by those seeking to set up or expand dealer networks.

HALL . . . "I'm not in the business of reducing dealer lists."

The move fits with Apple's shift of emphasis away from the hardware to software and support.

Tom Lowrence, European general manager, sees a shake-out coming in the proliferatioo uicto manufacturers, with 100 or so companies plummeting to just six or seven between 1984 and 1986.

"We don't feel that hot hardware will win the battle," Lawrence says. "All hardware is much the same, so extra little glitches will not tip the balance."

He reckons the winning manufacturers will be those which achieve commitment from the software conmunity — to give the software needed for machines to be accepted by users — and successful sales and distributioo chaonels.

The stance is oot surprising, since Apple is commonly seen as lagging behind competitors like Commodore and Tandy in expanding its product line, and is under threat from above as mainstream computer companies move down to the micro market.

Its 16-bit machine still waits in the wings, leaving its computer offerings at the ageing Apple II and the Apple III, which has not made a large impact in the business market.

We'll only use minis where we have to, says DP manager

DISTRIBUTED processing is not always the best solution to computing problems, according to one DP manager.

Ian Morris, computer services manager at quarry operator Tilcon, last week told an Institute of Data Processing Management conference that his company had firmly resolved to use minicomputers only where mainframes were totally impractical.

Speaking in London at the IDPM's annual general meeting Morris said that this decision followed the company's disillusioning experience of installing distributed minicomputers in its Northern and Scottish regional headquarters.

The unsatisfactory results of this exercise contrasted strongly with the success of a mainframe replacement project run at the same time.

Tilcon's story starts in 1980. At that time the company was suffering a downturn in trade as a result of the recessioo. Management had acquired a good understandiog of computers, and were pressing the computer department for enhancements to its service. This was difficult, as the twin mainframe system was purely batch and so systems development was a slow process.

In consequence, a thorough review of all systems was set in motion. This involved both users and top management, and covered manual systems, accounting machines and bureau usage as well as the DP department's activities. The result was a divisioo of opinions about which route to take, both within the computer department and among the users.

Senior management accordingly stepped in and took the decision to go for a new dual mainframe at the centre, capable of supporting online working through a oetwork of 50 printers and terminals. In addition, there were to be two minicomputers, each supporting 12 terminals, at the two regional headquarters.

The mainframe installation went in as planned and was, said Morris, in every way satisfactory. This project involved the conversion of 600 programs, which was completed on time within 10 months, and required terminal response times ranging between two and five seconds, which has been achieved.

With the minicomputers (which came from the same supplier as the mainframes) it was a very different story. It was found impossible to keep to the development schedule, despite a high level of (costly) overtime. When the systems were finished they were not as user-friendly as had been planned, and user morale was low.

The operators had to have considerable machine experience and "total involvement". The systems could not be left to their users, but depended heavily on central DP staff support, which naturally had an impact on the mainframe project.

Even technically the minicomputers were disappointing. The response times were very slow — typically 20 to 30 seconds — and it was found that minimal increases in transaction volumes involved disproportionate capital expenditure. Even the basic hardware was more unreliable than that of the mainframes.

In fact the only good thing Morris could find to say about the minicomputer project was that they "had gained experience."

For other users planning to use minis he had three principles to offer. Don't underestimate the effort required. Check and double-check your requirements in detail. And make sure you have access to a spare machine for full testing.

Scots schools conference

SCOTTISH schoolchildren will get a chance to find out how computers are used in industry at the end of the year. A conference, Concept 82, has been organised for December 29 and 30, and will be attended by fifth and sixth form pupils and staff from every secondary school in Scotland.

Concept 82 will be held simultaneously in Glasgow and Edinburgh. There will be about 50 senior executives from local companies and financial institutions at each venture. The conference programme will be announced shortly.

Alexander Fletcher MP, Under-Secretary at the Scottish Office, has agreed to be the principal sponsor. Financial help for the event has been promised by the Scottish Development Agency, the Scottish Education Department and the National Computing Centre.

IBM bans European order switching

by Kevan Pearson

USERS and leasing companies can no longer get massive cash savings by switching their orders between four of IBM's European markets. For IBM has banned the practice called "order diversion" in France, Belgium, Luxembourg and Portugal following the recent round of currency devaluations and the imposition of price control in all four countries.

The company is also to review diversioos from Italy on an individual basis, though it will still be possible to divert orders to other European markets.

The order diversion mechanism has been used to provide users with substantial savings because of the currency differences in the separate countries in which IBM operates. It works simply: the customer transfers an order from, say IBM UK to IBM France where the order is fulfilled according to the IBM UK delivery date, but at the price currently available in France.

Both France and Belgium have recently devalued their currencies, and both have announced prices and incomes restraint. This has left IBM and other companies operating in the market without recourse to revising their prices to take account of devaluation. The result could be a significant downturn in sales volume in the countries whose currency has remained stable, as users divert orders to countries with an effective lower price.

On some items of IBM equipment discouots of between 20% and 25% have been possible, according to John Fuller, a director of PCML, the independent leasing company. "Last year the 3033 was very cost effective in terms of diversions," he says. Though the discount was in the region of only 5% on processors, even this is advantageous given the high cost of a 3033 or a 3081.

IBM has been trying to tighten up on the practice for some time, says Fuller. For instance, IBM will not accept diversions in the last 90 days before customer shipment.

Fuller says some users have been able to obtain early shipment 3081s, without paying an early shipment premium.

MoD mainframe order goes to open tender

by Nicholas Bntlcknap

THE new rules controlling government procurement of computer systems are beginning to bite. The Ministry of Defence has placed an order with Honeywell for three DPS 7/35 systems to be used for naval weapons ordering.

This order, the first placed by the Ministry under the EEC/GATT legislation which came into force in January 1981, went to open render, unlike previous MoD mainframe orders which, except under special circumstances, were awarded automatically to ICL.

The three systems will be placed in separate naval establishments at Portsmouth, Bath and Weymouth. They will be linked together and will provide mutual back-up.

COMPLETE SYSTEMS ARE ONLY PART OF THE PACKAGE!

Now that Rapid Recall are distributors for Digital Q-bus* packaged systems, you can be sure of fast deliveries – and a lot more besides.
Like the largest stocks of LS1-11* based systems running RT11* or RSX11*, fully supported or licenced only. We will arrange installation and maintenance for you with Digital Field Service for real peace of mind. And of course, you'll get all the support you need from Britain's leading Digital experts.
So phone Rapid Recall today, and we'll show you the faster, easier way to Digital micro boards, boxes and complete systems.

Rapid Recall Limited (Southern)
Rapid House, Denmark Street, High Wycombe, Bucks.
Tel: (0494) 26271 Telex: 837931
Rapid Recall (Northern)
28 High Street, Nantwich, Cheshire.
Tel: (0270) 627505 Telex: 36329.

Rapid Recall

AUTHORISED digital INDUSTRIAL DISTRIBUTOR

*** ASK FOR INFORMATION ON THE NEW PDP-11/23 PLUS SYSTEMS ***

Sir Michael to speed Mercury on its way

by Donald Kennett

BL'S saviour Sir Michael Edwardes is all set to work wonders for the UK's forthcoming alternative telecommunications network, Project Mercury, plans for which have already spurred British Telecom to vigorously competitive behaviour.

Last week, he was appointed as a part-time non-executive director of Mercury Communications with a view to becoming its chairman "in due course", probably at the beginning of next year.

Sir Michael joins a Mercury Communications that is at an advanced stage of negotiations with more than 30 potential major customers and is preparing to open its first services next March, almost six months ahead of its initial plans.

A spokesman for BL said Sir Michael had always planned to leave at the end of 1982, although that meant the full results of his work would not show until after he had left. He had set the company on course for needing no more government aid after the end of 1983 and the first evidence of this would appear in the half-year results due in September, the spokesman added.

Sir Michael is said to be attracted to Mercury by the new technology, the new markets and the significant growth potential of the company. All his managerial life before BL was spent at the Chloride Battery group, which he joined as a management trainee in the financial area in 1951 and left as chairman in 1977.

Mercury Communications' marketing director Stuart Bailey said: "Sir Michael is a leading figure of British industry who has an enormous range of skills which will be very welcome to us. He has great personal presence, drive and capability. He will be an excellent man for the job."

Chief executive Derek Evans said: "We are delighted that Sir Michael has agreed to join us in the Mercury venture. His considerable experience will be of great value to the company."

The initial plans for the Mercury network are for £50 million to be invested in providing leased connections for businesses, using optical fibre cables laid alongside railway tracks for the trunk links between 30 towns. Distribution within the towns is to be handled by line-of-sight microwave and cellular radio, a technique used elsewhere for mobile telephone services.

The network is due to start operating next year and details of the first services, in London, are to be announced this week or next week.

Mercury's prospects include a vigorous campaign of opposition from trade unions led by the Post Office Engineering Union and a pledge from the Labour Party to turn it over to British Telecom if it returns to power.

EDWARDES...Always meant to leave BL at end of 1982.

ICL unions accept 5% — except the engineers

by Sarah Hardeastle

ICL staff are to get their first across-the-board pay award for two years. The company's five per cent pay offer has been accepted by all the ICL trades unions with the exception of its service engineers, who are considering strike action unless the offer is significantly improved.

But the pay deal has been accepted only to the end of the year when the five ICL unions, which bargain jointly, will put in a further claim.

Speaking on behalf of the bargaining collective, Tim Webb, national officer of ASTMS, the largest of the ICL unions, said: "The offer has been accepted but with the proviso that a further claim will be made in January next year. This will allow us to ascertain ICL's level of recovery. I've no idea what the new claim will be but it will be based on ICL's full year profits."

According to Webb, the offer was accepted by a two-to-one majority by the main body of ASTMS members which number just over 4,000, and the other ICL unions: AUEW with 700 members, APEX and ACTSS with 600 between them, and BESA.

Following last year's redundancies, about 60 per cent of ICL's 14,000 workforce is now unionised.

The offer will raise basic salaries by five per cent with a minimum increase of £234 per annum for the lowest paid. A merit increase, awarded at ICL's discretion, has been agreed, raising the company's salary bill by a further three per cent.

Though ICL made no across-the-board pay award last year, scale increases and London allowances have been made by the company since the last pay round in 1980.

Left out of these interim awards were the service engineers. As a result the 1,800 service engineers who are members of ASTMS, but bargain independently of other ICL unions, are now threatening industrial action.

So far ICL has made a minor improvement to bonus payments, but according to Chris Ball, ASTMS officer for the ICL engineers, "this is not likely to be acceptable".

In the meantime, ASTMS is bailoting the engineers by post over the proposal for a series of one-day strikes. If the proposal is carried and ICL fails to produce a better offer, "industrial action could apply from July 16", said Ball.

BARRATH..."A lot of government support."

To you, six months payment free — offer from Elbit

ELBIT Computers is banking on a six-month payment-free package backed by the Israeli government to encourage UK sales of its systems.

The Haifa-based manufacturer of mainframes, minicomputers, terminals and communication equipment will announce the deal in a few weeks time.

After the six-month free period customers will make 10 equal payments over the next five years at a 10% interest rate.

Elbit's UK managing director Yossi Barrath said the terms would be available for both dealers and end-users, and there would be no minimum purchase amount for buyers to qualify.

Barrath admits that Elbit gets a lot of government support, and that all computers scheduled for export receive a special subsidy. The Israeli government matches development costs of Elbit systems pound for pound.

Elbit has ambitious plans for the UK, which it considers the most important market in Europe, but it still has along way to go before it meets its "minimum target" of £10 million a year turnover. Last week it signed up GCS Engineering to provide third party maintenance for its existing installations in the UK, and GCS managing director Bill Nichols says he is convinced that it will be a lucrative deal for his company in the long term.

Elbit manufactures an IBM 4300 software compatible system, which has been sold in Europe by Nixdorf. The recent release in the UK by Nixdorf of its 8890 mainframe is based on Elbit hardware. But in spite of the new financing deal from Elbit, Barrath does not expect to be in much direct competition with Nixdorf.

Nixdorf, he says, is marketing the 8890 with its own operating system in the UK, while Elbit will go for the IBM market.

Barrath says Elbit is already working on a product whieb will be the basis of the next generation of Nixdorf mainframes.

Elbit had worldwide sales of $72.7 million and pre-tax losses of $953,000 in the year ending March 31, 1982, compared to 1981 sales of $61.9 million and pre-tax loss of $3.6 million.

Govt may help with high-tech premises

by Our Parliamentary Correspondent

NATIONAL and local government are to tackle the problem of attracting high technology companies to the UK.

John MacGregor, junior Industry Minister, told the Commons that the question of providing suitable premises for international high technology companies was being considered both in the private and public sectors with the aim of making sure that these companies came to the UK.

He was responding to a question from Dudley Smith, MP, who grilled the government about evidence that these companies were unable to find suitable premises in Britain and were being forced to set up on the Continent.

Smith pointed out that the fastest growing sector of British high technology industry was in companies employing under 100 people and asked if the government had considered helping these companies to find accommodation, particularly in the Home Counties.

And he urged the government to take steps to ensure that foreign companies in high technology were encouraged to set up in the UK.

MacGregor said that the traditional sort of industrial estate was not best suited for the new campus style developments favoured by the high technology companies. Both local authorities and new town authorities were moving towards the provision of premises suitable for offices or for high technology manufacturing.

This was often being done in collaboration with universities, he said, and claimed that science parks comparable with anything available in Europe were now on offer in the UK.

MacGregor added that the question of whether or not current planning procedures might inhibit this type of development was under consideration.

A Computer Weekly survey earried out with chartered surveyors Herring Son & Daw earlier this year revealed that 64% of the computer companies polled claimed that there was a lack of suitable buildings for their expansion in the UK.

Disc firms seek new ways to record data

by Kevan Pearson

THE latest generation of disc drives as typified by IBM's 3380 and rival products could be the last of their kind as disc manufacturers seek new ways of recording data.

The new systems will record into rather than along the disc surface and will use magnets arranged side by side.

The present generation of large scale disc drives are the culmination of 20 years of development in conventional recording techniques, whieh use a longitudinal magnetising method.

The crunch has come for conventional systems because of the rocketing demand for more memory to be crammed into a smaller space, since the physical size of most DP departments is fixed. The new perpendicular recording method allows much higher densities than the old system. This is imperative given the burgeoning demand of disc memory as witnessed by the furore over the non-appearance of IBM's large scale 3380.

The problem with the existing disc drives is that to achieve the best design of magnetic recording pattern on the ferrite platter the layer of magnetic coating has to be very thin. This has led to severe problems as the magnetic coating is prone to come away from the base, again one of the difficulties IBM had in getting its 3380 into production. It also limits the bit density of discs to, at present, between 10,000 and 15,000 bits per inch.

Even if the magnetic coating remains intact its thinness can lead to a significantly higher error rate because of the inherent weakness in the magnetic signal.

The proponents of perpendicular recording, where the data is recorded into the magnetic material rather than along it, claim that the new method will allow bit densities, or flux reversal densities as they prefer to call them, of over 100,000 per inch, or between six and 10 times the level currently available.

However, the new method is not without its own problems. One is the sophisticated alloy of chromium and cobalt which is used as the magnetic medium.

SALES BRIEF

Honeywell wins $602m Navy order

HONEYWELL and Burroughs have won multi-million dollar contracts from the US armed forces for data processing equipment. The largest, for $602.9 million, was awarded to Honeywell by the Navy for 1,800 DPS-4 processors and peripherals to be supplied for shipboard administrative work over the next 10 years. The company also won a $46.8 million contract from the Army for business oriented systems for its bases in Europe.

Burroughs won a $144.4 million Air Force contract.

Midas touch

BIS SOFTWARE has made record sales worth £2 million of its banking and insurance systems Midas and Folio during its first quarter this year, with Midas sales in Europe, the Middle East and Africa accounting for nearly half. It has sold 250 Midas systems worldwide since 1976.

Million drives

CALIFORNIA based Tandon, which claims it will this year become the first manufacturer to deliver a million 5¼-inch floppy disc drives, has won two orders which together exceed last year's total sales of $54 million. The first, from VDU maker TeleVideo Systems, is for $43 million worth of floppy and Winchester disc drives to be delivered over the next two years. A second $37 million order from an anonymous small computer manufacturer is to be fulfilled within the next six months.

Irish choice

SEVEN car dealers in Eire have installed Wang 2200 small business computers running motor traders' software supplied through the Dublin office of Kerridge Computer Company. The whole deal is worth about £500,000.

Motor Deal

LONDON-BASED UK subsidiary of MAI has made a sale of its Deal business system for motor traders to White Brothers Contract Hire of Taunton. The system will run on a Basic Four 210 mini and its functions will include accounting with audit trails and immediate posting to all ledgers, vehicle billing histories, payroll and word processing.

Italian viewdata

ITALIAN Post Office has ordered 200 UK-made viewdata terminals, costing about £200,000, from Philips for use in a public viewdata trial. They are all 14-inch colour business terminals with alphanumeric keyboards. Philips is already exporting terminals for viewdata trials in countries including France, North America, Australia and South Africa.

Councils' system

SWANSEA-BASED local government software specialists Business Micro Systems has made five sales of its system, to Swansea, Stoke-on-Trent, Gloucester, Tewkesbury and Carmarthen Councils. Totalling £200,000 in value, the systems all run on Digico M16/M28 minis and are used for direct labour organisation accounting, word processing, handling planning applications and providing links to ICL and Honeywell mainframes.

NCR for Swiss

SWISS Bank International has installed an NCR I-9040 in its London office to support its dealing activities in syndicated loans and international securities such as Eurobonds. The machine will share peripherals with an existing NCR 9450 which is now used for development work.

FIFTH GENERATION—1

More than 200 delegates met in London last week to discuss the fifth generation of computers... Our staff report

Japanese report seen as a 'technological Mein Kampf'

by Kevin Cahill

THE first full-scale Western conference to consider the Japanese fifth geoeration computer project got off to a controversial start. The project was described as a threat, and the report on it as a "technological Mein Kampf."

Conference chairman Alex d'Agapeyeff who so described the Japanese endeavour, went on to summarise his gloom-laden reaction by calling the project a "Computing Apocalypse".

The Japsnese project, now known inside Japan as the Knowledge Information Processing System, or KIPS, is fundamentally a user-driven attempt to make the next generation of computers serve user ends, and solve real problems.

The central objective of the Japanese project, to which a representative collection of the world's technologists has been invited as participants, is to devise a mainframe series which will be self-programming.

By strueturing the new architecture around a CPU of 1,000 processors which is interfaced to a speech and natural language input/output interface, and with instantaneous access to a 100-gigabyte universal database, the Japanese hope that when you ask their future computer a question, you get an answer, not an invitation to rewrite the question in Cobol.

Describing the project as a brilliant marketing strategy by the Japanese, Professor Ed Feigenbaum, of Stanford University, US, said that the Japanese were picking an economic point beyond the view of IBM and US companies.

In doing so he felt that they were expressing a view of computing in the 1990s which was shared by many American users and venture capitalists.

Feigenbaum added that the Japanese have correctly spotted the beginning of the age of machines which engage in symbolic manipulation, and not numeric computation. The selection of technologies — array processing non-von Neumann architecture, VLSI — were also good, and likely to yield the desired result. Adding to this the quality of Japanese engineers and their speed at learning, Feigenbaum seemed convinced that the Japanese would make it.

But there were risks, Feigenbaum suggested: "Despite the level of engineering technology involved, the project is based on software, and Japanese managers are not comfortable with software; the project is very ambitious in terms of the state of current knowledge and carries great risk, a position which Japanese managers are normally averse to; nor is there a lot of in-depth knowledge engineering experience in Japan, and that will be a significant handicap," he said, "but 10 years in this industry is a long time."

Feigenbaum suggested that if the Japanese achieved only 20% of their goals, they would still wind up ahead of the game.

"As long as they are on the right vector and on the right course, it does not even matter if they miss their speed goals by orders of magnitude, they will still have a major lead on American companies."

FEIGENBAUM . . . Convinced the Japanese will make it.

d'AGAPEYEFF . . . He called the project a Computing Apocalypse.

Ability to see it through

by Kevin Cahill

MYTHS about the Japanese and their fifth generation project were exploded by Phillip Treleaven, professor of computing at Newcastle University, at last week's London conference.

The Japanese have a clear idea of what the project itself is, he said, although some commentators have suggested that either the project is a "dummy" pass to divert attention away from what the Japanese are actually doing, or that it is speculative.

Treleaven and Ed Feigenbaum of Stanford University, both agreed that the image of the fifth generation computer was clear, and probably attainable.

According to Treleaven, it was not definite that the Prolog language would be used.

Prolog is a relatively new computer language, based on statements in formal logic similar to the preposition, If A then A.

Its proponents claim that it can solve problems, particularly in scientific areas, which could not previously be solved using conventional languages such as Fortran.

Its potential importance in the Japanese project is that it appears to fill the gap between the natural language interface and the machine processes themselves, a gap for which there is no other apparent solution at the moment.

Prolog was first implemented in France in 1972 and is widely used in Hungary, mostly for scientific applications.

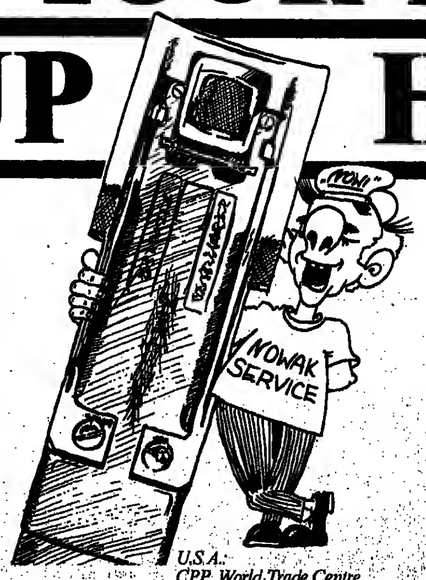
Confirmation of Prolog for the fifth generation machines has a central bearing on whether the Japanese will use existing semi-inferential software such as Fortran, or try to develop their own. There is grave doubt in many circles as to whether any existing computer languages can serve a function in the 1990s.

The use of Prolog would certainly imply that moves to make Cobol obsolete were under way.

Objections that the existing investment in programs written in conventional programming languages was so great that it would not be abandoned, were swept aside by several speakers.

Languages like Cobol were tools to solve problems, as were the programs written in those languages. If better tools came along, most speakers seemed to think they would be adopted without much regard to the existing user base of programmers in conventional languages.

"HOLD YOUR HEAD UP HIGH."



No need to hide your head in your hands when bottlenecks arise through defective or even missing magnetic heads. For when it comes to magnetic heads in particular we haven't exactly been nodding off. Hence the following are always in stock:
New CDC magnetic heads of various types
CDC exchange heads (Exchange of defective heads against new or reconditioned units)
Magnetic heads (new and reconditioned) of most kinds: Ampex, DRI/Diablo, Wangco, Pertec, JSS, Caelus, Iomec, CalComp and many more

Our additional service package for wise guys: Air filters for a wide variety of makes
CDC – Iomec – Caelus
Wangco – Pertec – Ampex –
CDC as well as spare parts
Magnetic Disc Cassettes
Magnetic Disc Packs,
CE-Cartridges
Rigid Discs
Our mobile service is always at your disposal!

NOWAK DATENTRÄGER GMBH
West Germany:
Schimmelbuschstrasse 21a
D-4006 Erkrath 2
Tel. (0 21 04) 3 10 96
Telex 8 581 180

U.S.A.:
CPP, World Trade Centre
Computer Parts & Peripherals Inc.
28441 Highridge Road, Suite 201
Rolling Hills Estates, CA 90 274
Phone 213 544 0778
Telex 910 344 7385

'Mankind undermined by false information' fear

by Philip Hunter

MUCH more emphasis must be placed on research into software technology if the Japanese fifth generation project is to succeed. In a paper to the SPL fifth generation conference in London warning of the dangers of concentrating too much on hardware and social objectives, Professor Manny Lehman, of Imperial College London, pointed out that the problem of producing and maintaining cost-effective software has plagued the computer industry since its inception.

This problem would increase with the advent of new complex fifth generation hardware architectures unless a great effort was devoted to coming to terms with the new complexity of the software that would be required.

"Mankind will be gradually, insidiously, undermined by an accumulation of incorrect information that could even lead to the complete destruction of society as we know it," he said.

The published fifth generation plan made passing reference to simple verification of programs, but completely ignored the biggest problem with all software – the issue of correctness, he added.

Lehman also criticised pioneers of expert system for fostering the belief that they are a panacea for all problems. "Expert systems feed the tendency to believe what the computer tells us is gospel," he said.

Lehman claimed that HMS Sheffield was sunk in the Falklands war because an expert system had failed to detect the lethal Exocet missile.

"The system was told Exocet was a friendly missile," he said.

Lehman was talking of the rule-based expert systems such as are sold by SPL, which sponsored and organised the conference. "I would place an equal or higher priority on software systems engineering than on rule-based software," he said.

The theme of Lehman's paper was echoed more meekly by other speakers. It was agreed that more money would have to be found for research into software techniques to come to terms with the challenge presented by new hardware architectures.

Michael Duff, of University College London, complained that some of this vital research was being undermined by an anomaly in the way grants are allocated. "A person who makes a proposal for a research contract may not charge his time to that contract," he said.

In a panel discussion, Professor Donald Michie, regarded by some as the founder of rule-based expert systems, ignored Lehman's criticism of his beloved subject, and urged that his comments be seriously considered. "I hope Manny Lehman's eloquent remarks earlier will stimulate an improvement in communications between the various people involved," he said.

In a speech at the conference reception, Information Technology Minister Kenneth Baker gave a hint that the government might be able to find some of the money urgently needed to meet the Japanese threat. "I hope to have some proposals to put in September," he said.

STEFIK . . . Divide and conquer is the key.

VLSI chip of the future

by Philip Hunter

THE Japanese fifth generation project was criticised by some delegates for failing to address the whole spectrum of computer development. But this criticism could not fairly be levelled at the conference itself, which covered software engineering, expert systems, natural language developments and hardware configurations.

There was only one paper speculating about developments inside the VLSI chip, given by Mark Stefik, of Xerox Palo Alto Research Centre, US.

Stefik described how a hierarchy of designs on the chip could be implemented to perform forks, joins and other operations. "The principle of divide and conquer is an essential part of mastering otherwise overwhelming tasks," he said.

Stefik emphasised that his approach differed from the so-called silicon compilers, in which the behaviour of the chip is specified at just one level.

Silicon compilers fail to exploit many design possibilities, he said.

So far, Stefik's team at Palo Alto has completed some preliminary experiments with hand-worked examples, which, he said, suggest that great savings of time and space could be made by putting software into a chip. The question is whether this approach will make a significant contribution to the vast time and space cuts that various speakers agreed will have to be made to maintain the momentum of the computer industry.

'Machine takes 20secs to do what humans can do in a millisecond'

by Claire Gonding

MACHINE speed is still one of the biggest problems facing researchers who are working on "knowledge machines".

"Programs have no quick way of finding relevant knowledge," said Danny Hillis of the Artificial Intelligence Laboratory at Stanford, speaking at the fifth generation conference. "Humans do it in a flash, but right now it takes 20 seconds to do something on a machine which humans do in a millisecond."

The paradox of present research, said Hillis, was that machines were getting slower as they built up knowledge systems. In Stanford there is a project, known as the Communication Machine, designed to crack the problem of speed by dispersing knowledge between a mass of specialised processors.

"The trick is to design a network where messages can be sent very quickly," said Hillis. "Each node in the network [illegible] knowledge on one subject, and addresses of others with information on related subjects. It is [illegible] out of the range of possibility [illegible] have a machine with a [illegible] processors on it."

The Stanford team working on the Communication Machine [illegible] reached the point where there should be a knowledge network operating with 100 or so nodes, by this time next year.

The system would deal initially with knowledge manipulation [illegible] as recognising algorithms, drawing analogies, and making commonsense deductions without difficulty.

The Communication Machine fits in with other fifth generation work on speech, vision, knowledge bases and robotics.

"The biggest obstacles facing the development of these machines are communications, packaging, fault tolerance, and testability," said Hillis.

Hardware for ideal 5th generation machine

by Philip Hunter

DELEGATES to the SPL fifth generation conference were bombarded with possible hardware configurations for the ideal fifth generation machine, and many must have come away more confused than when they arrived. But at least one paper, by Philip Treleaven of Newcastle University, made an attempt to reconcile the various approaches.

"I believe in a system architecture embodying special purpose computers like dataflow and reduction machines," said Treleaven. Each computer could itself contain several hardware arrangements to suit particular different applications, he added.

Treleaven described the three types of hardware that had been investigated by his architecture research group at Newcastle. These are dataflow, control flow and reduction.

Treleaven believes all three approaches should be implemented in a single system because each works very well on some applications while floundering on others.

In general, control flow is good for processing large data structures where the same values may be used many times, but not so good for evaluating strings of simple arithmetic expressions.

Dataflow and reduction work well for evaluating large numbers of relatively simple arithmetic expressions, but are less successful than control flows on large data structures.

But one form of reduction, called graph reduction, holds some promise for attacking large data structures.

Dataflow and reduction embody no concept of data storage. With dataflow, execution is tied to the data as it comes off the input device. For example, an arithmetic expression is evaluated when and only when all the necessary data have arrived.

A dataflow program can therefore be executed while input is still coming in, and could work well with ICL's Content Addressable File Store (CAFS) controller, which enables data to be selected at the speed it comes off disc.

Control flow differs from dataflow and reduction in that there is no movement of data once it has been read in. Unlike dataflow, where tokens tell data items where to go, control flow uses tokens to specify what action is to be performed on data items.

TRELEAVEN . . . Room for several hardware architectures in the ideal fifth generation system.

Goals of the fifth generation

by Kevin Cahill

THREE years ago the Japanese commercial and academic community, under the guidance of the Ministry of International Trade and Industry, set up a series of committees to consider the contribution of high technology to the solution of Japan's perceived social and economic problems towards the end of this century; and the role that Japanese computers and technology should play in the fifth generation of computers.

The culmination of the first stage of the project as it was set up in Japan took place at an international conference in Toyko last October.

The conference to which most Western nations and many commercial organisations such as IBM sent delegates, received a preliminary report which summarised the Japanese work for the first two-and-a-half years of the project.

The report reiterated the Japanese invitation to foreign commercial and governmental organisations to join Japan in building the fifth generation machines, and began by defining the strategic problems which the Japanese expected the technology to solve.

Summarised these were:

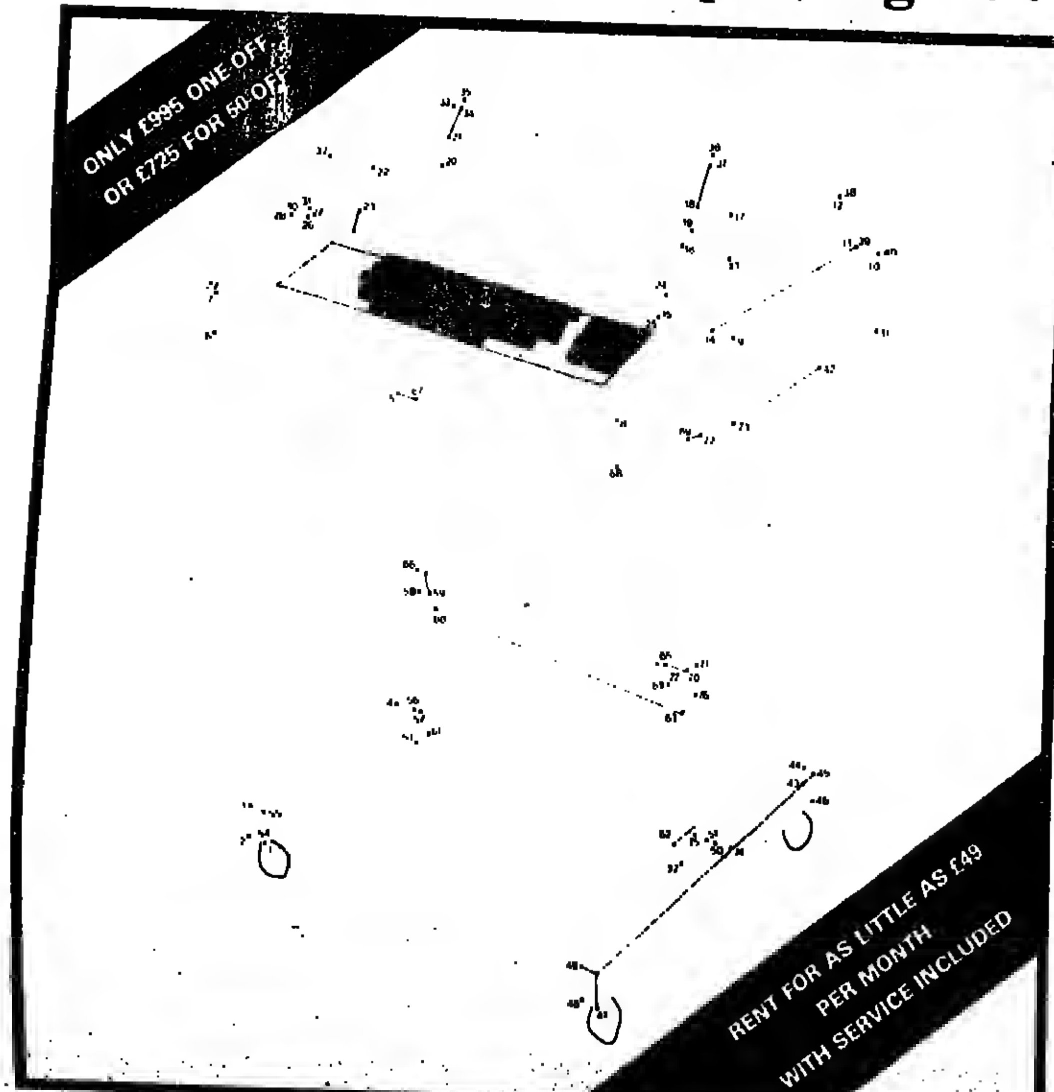
- To increase productivity in low productivity areas, such as agriculture, fishing, distribution and the public services.
- To help Japan meet international competition and at the same time to enable Japan to make a significant contribution to international co-operation.
- To assist in saving energy.

Following the general social goals, the report then set out a series of functional requirements for the technology. These were:

- A man machine interface at the input output level, which would operate on spoken language, graphics, images and documents.
- The conversion of stored information into practical use.
- The ability to perform inferential logic operations as well as process data conventionally.
- To eliminate, from an end user point of view, the use of most current programming languages.

This led to an outline concept of what the final machine would look like. It would be based on non-von Neumann architecture, [illegible] about 1,000 million [illegible] hardware would be built on VLSI technology and contain about [illegible] VLSI processing elements.

For better dot by dot printing . . .



Data Dynamics 1303 120cps Printer

Dot for dot, our 1303 represents better value than all its competitors. The 1303 is a high-performance 120 cps dot matrix keyboard printer offering many advanced features at a very attractive price. We now offer the British built 1303 at prices ranging from £725 to £995, depending on quantity – a price unmatched by any other manufacturer.

The 1303 includes a wide range of features as standard. For example, unlike many imports which are housed in plastic cases, the 1303 has an attractive and very compact metal case and plinth. This is a particularly significant benefit when the printer is used in those environments where the wear and tear of everyday use would otherwise cause damage.

As with all our terminals, the 1303 carries a comprehensive six month warranty. This warranty covers all parts, labour and travelling expenses (within the mainland UK). We are also willing to offer a further six months full parts and labour warranty for only £30!

Data Dynamics Ltd.
Clayton Road, Hayes. Middlesex. UB3 1BD
Telephone: 01 848 9781. Telex: 935429

In London the ideas were aired . . . in Edinburgh the practical people thrashed out their problems

Can the chip engineers come up with the goods to match the concepts?

by Hedley Voysey

ALL the amazing ideas represented in fifth generation feats of "knowledge engineering" will never come to pass, except for the very rich, unless design engineers produce the machines to match the concepts. That was the impression gained at last week's workshop for top chip designers in Edinburgh.

Peter Hart heads the Fairchild Laboratory for Artificial Intelligence Research. Formerly he led the team at SRI International that made significant progress in edging AI from the realm of theoretical possibilities towards practical progress, including a working vision system for certain types of application.

Hart notes that "Along with the general problem of conceptual complexity, we face the problem that our programs have apparently unbounded appetities for cycles and memory. The computational demands made by AI programs make it natural to consider whether VLSI-based architectures can be developed for 'AI-style' computation. Of specific interest would be architectures that provide high levels of concurrency."

This shows the link between Very Large Scale Integration efforts in design and the AI world very clearly. The key words are hammered at all the time by both sides of the fifth generation equation – the AI method builders and the computational superchargers.

Carver Mead, from the California Institute of Technology, who with Lynn Conway of Xerox's Palo Alto Research Centre wrote the book that set out the new methods of designing in VLSI, states that the entire problem of VLSI is "a challenge in complexity."

Part of the challenge is understood in principle. There are some "regular" patterns of computing which can be parcelled out on a divide-and-conquer basis to speed up the computations by doing things in parallel. The existing example is in vision work, and parts of speech recognition.

In both of these areas the captured signals can be sent in automatically delegated squadrons through networks of small specialist signal processing units. All types of regular designs for such concurrent computations are being tried out. At Carnegie-Mellon University HT Kung has a well studied and developed system labelled "systolic arrays" where the processing flows through leaf structures and the total number of instructions executed per second runs into the range of 10 to 160 million.

> 'AI workers have not stood still and the ideas used by them for tackling problems keep moving on'

This pace should enable some selected pattern recognition tasks to be done in the time available, which for many vision tasks is just a few milliseconds. However, while these regularly organised and automatically delegatable functions can be processed by suitably massed processor designs, the AI world has a need for coping with computational overloads which are not so nicely fashioned.

Most of these pieces of knowledge engineering which deal with more than a toy database of knowledge need much more computing power if they are to be widely used and extended in scope. The workhorse of much of the AI field is Lisp as a programming culture. For most of the Seventies this tended to be based on the larger Digital Equipment series 10 machines, and nowadays eats hefty sized VAX machines.

One outgrowth of this culture has been special purpose Lisp engines from Lisp Machine and Symbolics. In addition to these commercial designs there are research studies to provide greater Interlisp (Interactive) personal computing power and so on.

But AI workers have not stood still and the ideas used by them for tackling problems, their description and representation, both symbolically and as machine handable pieces, keep moving on. At this point the two complexity issues, that of VLSI design and AI problem solving techniques meet arm-in-arm.

KOWALSKI . . . Algorithm is equal to Logic plus Control.

Some AI workers believe that AI can help solve some of the VLSI design issues.

The newest machines for the fifth generation all try to exploit as much concurrent, parallel computation as can be squeezed out of a strategy for problem solving. This happens to mean using new classes of programming languages for best results, although it is possible to use existing ones.

To check whether the solution really works via parallel computations often means doing a mass of theorem proving; often this is supported by machine theorem provers. Once again the worlds of AI and predictable engineering in VLSI settle on the same intellectual patch of tasks.

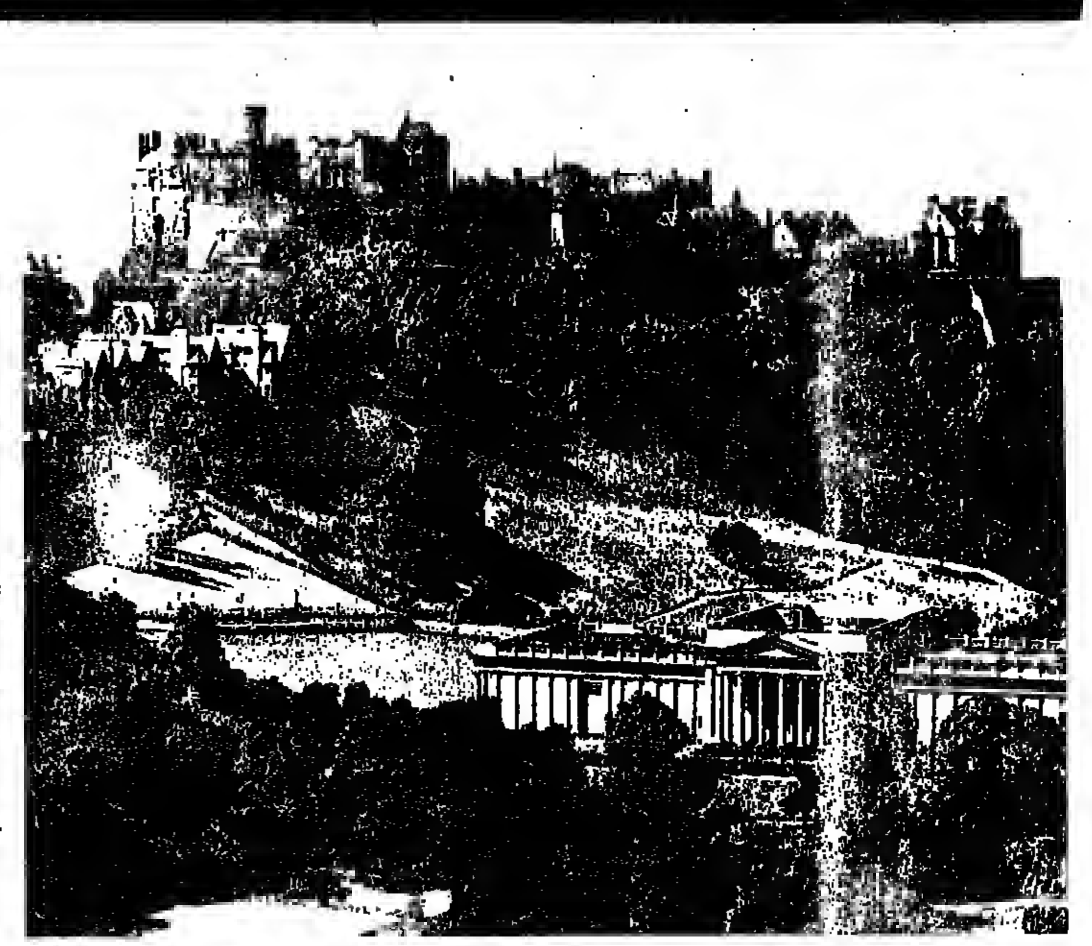
The splendid text on logic as a programming tool produced by Robert Kowalski of Imperial College, maintains that an "Algorithm is equal to Logic plus Control". It should be understood that control in this sense may be a whole mass of context to provide "meaning" to refine the "logic".

The strength of the Kowalski proposition is very much a matter for debate, and it has been debated for the last eight years since he enunciated it. But to all those involved in this discussion there is no doubt about the support needed by computer architecture when the context, or control knowledge, is ramified in the extreme way that it seems to be in many AI-type problems.

Some AI workers maintain that the gauging of this ramification in context is exactly what separates an AI problem from run-of-the-mill data processing. In other words, we have become used to dealing with logic applied to data which can be treated as self-sufficient in meaning, like accounting data.

The interesting problems all mean being careful about applying logic in appropriate contexts. All this contextual stuff, whether expert rules or knowledge geared to the concepts of that particular problem which is in hand at the time, has to be on hand somewhere – which is both a storage and a processing problem. So once more we are all back waiting for computer architects to provide a "machine for learning" in VLSI driven form.

The Japanese state that new machines are needed for data flow designs, which are machines which execute when the operands arrive rather than rush about fetching the operands (hence the name), and also database machines which can add deduction and inferencing powers to use databases which are really general forms of knowledge store, as well as pattern processing units for vision and speech.



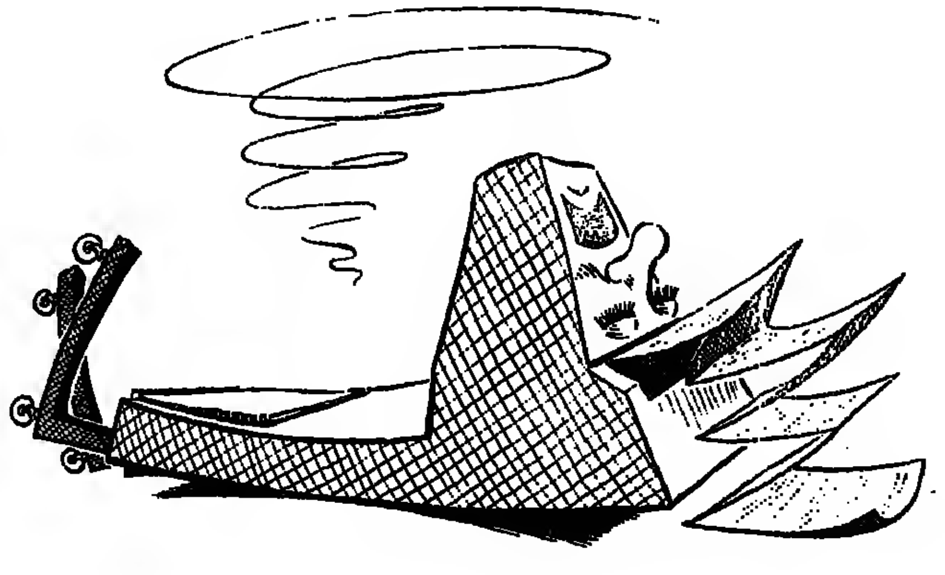
Will the hardware solutions to the problems of "knowledge engineering" appear in Edinburgh?

THE COMPATIBILITY BOX

- ★ Total user programmability
- ★ All aspects of the RS232/V24 Interface
- ★ Plus CODE conversion
- ★ Dealer prices
- ★ OEM prices

INCAA (UK) Ltd.
P.O. Box No. 66, Cheltenham GL51 5BJ
Telephone: 0242-31831

PASCAL
A Design Tool for microcomputer Systems Engineering
An intensive course of lectures, tutorials and workshop sessions.
September 20th-24th, 1982
BRUNEL UNIVERSITY
Phone: UXBRIDGE 37188 ext. 738 or 718 for Course Brochure



Don't let your Peripherals become Terminal!

Act now! Don't let your computer peripherals die of stress and neglect. Make sure that they receive the treatment they deserve. Remember, they play a vital role in your business and if they suffer a coronary just think of all those poor little records that will go unprocessed.

Proper treatment on a regular basis can prevent the inevitable. Data Dynamics have three strategically located clinics and a team of mobile professional doctors based throughout the UK. We are even into transplant surgery and carry a vast array of organs for transplant in stock.

Find out about our Service Contracts now.

Data Dynamics Ltd.
Clayton Road, Hayes, Middlesex, UB3 1BD
Telephone: 01 848 9781, Telex: 935429

CAP in Trader Point despite dealers' doubts

CAP has signed an enhanced Trader Point agreement with ICL, despite concern among other Trader Point dealers over ICL's operation of the scheme.

The agreement between CAP and ICL has been described as "collaborative", and is not specific to any particular product. ICL and CAP have worked together in the past on many projects, including that of British Defence Software, which is a consortium of defence information technology suppliers.

CAP sees the agreement as covering a number of projects, not necessarily all within the UK, and says that it is examining a number of joint efforts that will shortly be announced under this umbrella.

Representatives of CAP who attended the Computing Services Association joint seminar with ICL last month, however, expressed doubts about the way ICL was putting Trader Point into operation, a view echoed by delegates from other companies.

"We are considering Trader Point at the moment, because we market human resource systems based on IBM equipment, which could be converted to run on ICL's as a joint conversion and marketing exercise with ICL," said Jeff England of IAL Gemini.

"In a discussion with ICL at the seminar about how far local salesmen will decide which Trader Point dealer can best serve the customer, ICL seemed undecided about whether the salesman would offer the customer the full choice of software available," he said.

This was confirmed by Stephen Valdez, marketing director of Data Sciences International, a company which is also about to sign a Trader Point agreement.

"It was an opportunity to put cards on the table and ask frank questions, such as: If an item of software appears three times in ICL's catalogue, with ICL in competition, is the customer left to choose" said Valdez. "ICL said that if it has an appropriate piece of software, it will try to sell that and yet must protect its own salesmen, who get commission on software sales."

ICL recently also went against the spirit of the Trader Point agreement by purchasing application software from Systemsolve in order to please a customer ordering an ME29, who wanted ICL to take sole responsibility.

ELSE . . . *Looking for "additionality".*

by Maggie McLening

Govt aid plans may exclude small firms

SMALLER software houses may miss out on government funds to aid development if qualification rules for the Software Products Scheme are not relaxed.

Under the scheme, the Department of Industry is to provide £10 million in grants to help British companies produce innovative software with good export potential. But there are two stumbling blocks for small companies: work must not have been started prior to approval of the application; and approval itself might take up to three months.

Companies wishing to apply for a grant are asked to submit a 30-page proposal to the National Computing Centre outlining their plans, and showing how they propose to capture a share of the market.

Three weeks after sending in the proposal, they will be invited to give a presentation, an assessment of which will go to David Fairbairn, NCC head, who will send a recommendation to the Department of Industry. He may also ask for advice from members of the SPS Advisory Committee drawn from the DoI, NCC and Computing Services Association.

"I think the rules will have to be slackened for the scheme to work, because the timescales are much too long," said Avis Clarke, a consultant with Micro Scope software house. "We will probably submit a rough proposal to get some idea of what chance we've got, to avoid wasting any time."

This was a view shared by David Butland, manager of Bradford University Software Services. "It's quite reasonable that people should be asked to justify themselves for a grant, but having done that, what will they do for three months? The project may well lose its impetus," he said.

David Else, NCC scheme manager, told potential applicants that he was looking for specific qualities in applications. "We are placing emphasis on what I can only call 'additionality'," he said. "The use of government funds can only be justified if it gets you to do something you wouldn't otherwise have done, or to take a risk."

According to Butland, the timescales involved may have the reverse effect on the products.

"Small companies may be forced to go ahead with their really good ideas themselves simply because they are time critical, and apply for money for second-rate ideas that are always floating around, but you never quite get round to," he said.

Applicants to the scheme should note that grants of one third of the development cost will only be awarded until May 1983, when the proportion drops to 25%.

MSP turns to micros as intelligent terminals

MSP is to turn its attention to products using microcomputers, particularly the IBM Personal Computer, as intelligent terminals linked into mainframes.

MSP, which has subsidiaries in 18 countries and expects turnover to top the $20 million mark this year, supplies a range of Cobol development tools and design aids based around the concept of an all-controlling data dictionary. Initially, it is the Projectmanager utility that is under consideration for the IBM Personal Computer, but others may well be adapted.

"We are looking at the implications of the IBM PC and the Sinclair range, because they are all a means to an end. Microcomputers will permeate every level of computing, and we will have to be downwards compatible," said David Gomes da Costa, managing director of MSP.

The 52-strong research and development team at MSP is also working on a screen handling facility to front-end all the products, and help to control the profusion of screens generated within an organisation.

"It will be an interactive screen generator driven by the dictionary to enable the user to look at existing software, with complex indexation for an information bank," explained da Costa. "There will also be a full screen editor, and browse facilities."

While scornfully rejecting the Office of the Future concept as "an answer in search of a problem", he concedes that humans must "download some of their functionality into a microprocessor" in order to make any steps forward. The major problem of proliferating microcomputer systems he sees as one of data integrity and security.

"At the moment we are going through the same kind of industrial revolution that followed the 1971 recession," he said. "If we're not careful, all that will happen is that we shall become increasingly misinformed with more and more misinformation."

DA COSTA . . . *People must "download their functionality to a micro".*

A MATTER OF LIFE OR DEATH

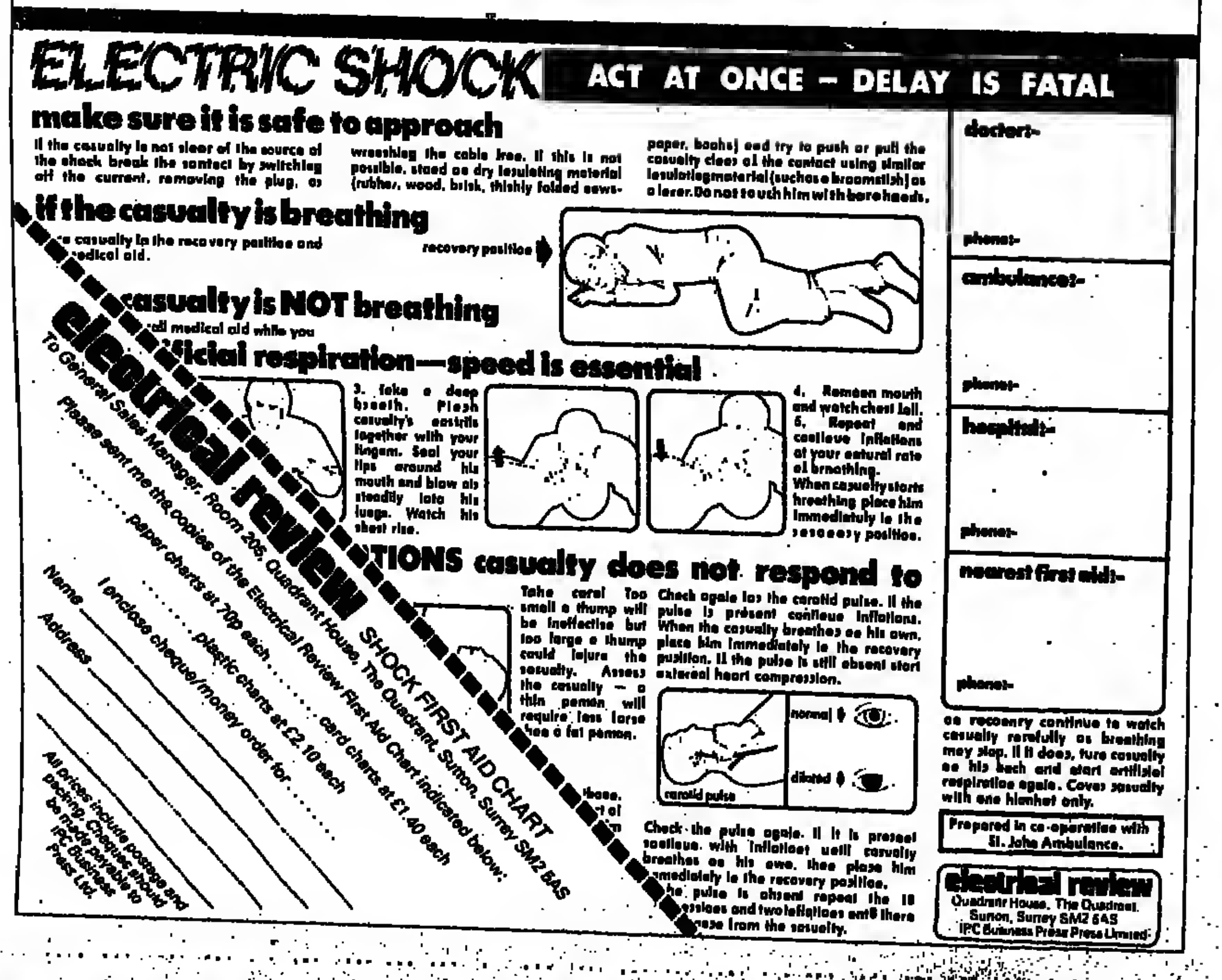
When an accident occurs involving severe electric shock, people on the spot may be suffering from a kind of shock themselves. The realisation that one has literally only seconds to save a life can itself be momentarily paralysing.

That's why Computer Weekly's sister journal Electrical Review has completely restyled its Electrical Shock Chart. The new chart, prepared in consultation with St. John Ambulance Brigade, highlights the main points in red, and explains and illustrates the actions to be taken so clearly that they can be grasped instantaneously even in a crisis. It also includes vital instruction on what to do if the casualty does not respond to artificial respiration – with a section on external heart compression.

Action this second could save a life. Post this coupon NOW.

VIVID RED AND BLACK. PLASTIC CARD OR PAPER.

SIZE 19 in × 13½in (474mm × 346mm)



by Kevin Cahill

Accounting for the lost millions at National Enterprise Board

A LINGUIST once said that the purpose of language is not to communicate, but to conceal. He might have been talking specifically about the National Enterprise Board, which recently announced a loss of £56.2 million for the year 1981. But the full consolidated group accounts showed NEB's losses – that is money spent, and for one reason or another irrecoverable – as £44.1 million before tax.

The larger, £56 million figure was arrived at by combining investments and losses, which may make accounting sense, but must only be confusing for the majority of taxpayers whose money is lost or invested by the NEB.

What this appears to mean is that the NEB increased the apparent loss by taking two provisions: One was £12 million for Data Recording Instruments, and the other was a general provision, that is money which may have to be paid later, of £7.18 million against its general investments.

What this accounting fudge has done is to obscure the plain fact that the start-up costs at United Peripherals were almost £32m.

According to the NEB accounts, losses of £10.34 million at DRI in 1980, and further losses of £9.73 million, were primarily attributable to the costs of starting up the joint venture with Control Data Corp at Winsford.

What has appeared for the first time is an additional £12 million of stock write-offs occasioned by DRI's entry into the project.

The fact that so much public money can be spent without any detailed accounting explanation, or indeed advance estimates which would have enabled progress to be monitored, is unusual. According to Sir Frederick Wood, the chairman of the BTG Group which encompasses the NEB, UPL will be in profit in the next year or two.

The accounts also fail clearly to associate investments in the two companies, and the running losses paid, presumably, by the NEB.

Other heavy losers at the NEB were: Inmos, £15.11 million in 1981, compared with a £5.78 million loss in 1980; and Nexos the now defunct word processing venture, which lost £13.2 million in 1981 and £9.99 million in 1980.

SCHROF . . . *Used government scheme for high initial borrowings.*

Banks too cautious when start-up firms need help

PROFITABLE companies overtrade, but British banks are still unable to adjust their cautious lending policies to meet the needs of new technology start-up companies that are short of cash.

This was one of the messages from the first provincial computer industry financing conference which was held near Reading last week by stockbrokers Heseltine Moss.

The event, in the intimate surroundings of an elegant country club, once again brought together a group of financiers with money to lend to computer companies, and a small gathering of computer companies which had either just started up or were seeking their second round of initial financing.

One measure of the effectiveness of the conference was the departure of one small company representative with a promise of £100,000 from one of the financing participants.

The conference itself, addressed by a series of speakers from both sides of the fence, managed to raise a number of thorny and central questions about financing in the UK.

According to several speakers, particularly from the industry side, one of the major failings on the part of the banks was the inability to adjust to the cash shortage raised by rapid sales expansion. Traditionally, UK banks and lending institutions are very cautious when it comes to funding companies which may be technically overtrading.

In effect the companies are selling more product than can be financed by their cash flow, and consequently a need for further borrowings is created. That in turn may lead to an increase in "gearing" – the relationship between a company's borrowing and its shareholders' funds.

But one delegate said he had never come across a profitable company which did not overtrade. It was the cheapest form of borrowing, letting your suppliers fund you interest free.

The discussion led to a spirited defence of the banking industry's current position by Colin Amies, Midland Bank corporate finance director. He said there was no shortage of funds for companies which were trading successfully.

For a good proposition, Amies said, his bank would always be able to make an offer of funds. A good proposition was one which came with a complete team covering marketing, technical matters, production and finance, with an in-depth knowledge of the market they were entering.

Raul Schrof of Scribe and Naomi Langford Wood of PME, who have recently started up computer companies, were both appreciative of the help they had received from their banks, Lloyds and Barclays.

Schrof said that he and his fellow directors had used the government guarantee scheme to raise quite high borrowings initially.

This enabled them to hold on to all the equity until it, and the company, were worth enough to consider selling some shares for the kind of money which would launch the company into the marketing phase of its development.

64% profits slip at DG

by Kevan Pearson

PROBLEMS affecting Data General continue to have a depressing effect on the company's financial performance. Third quarter profits fell 64% to $3.5 billion compared with the same period last year. Sales were $145.4 billion, up $5 billion on the previous year.

At the three-quarter stage profits are down almost 42% to $19.2 billion. The company, once one of the fastest growing and most aggressive in the industry, has been stagnant for almost two years.

In 1981 it slipped one place to 12th in America's league table of computer sales. Profits last year slipped 7.4 per cent to $50 million on sales up 13.6% at $764 million – a rate of growth less than half that of the Digital Equipment, the industry leader.

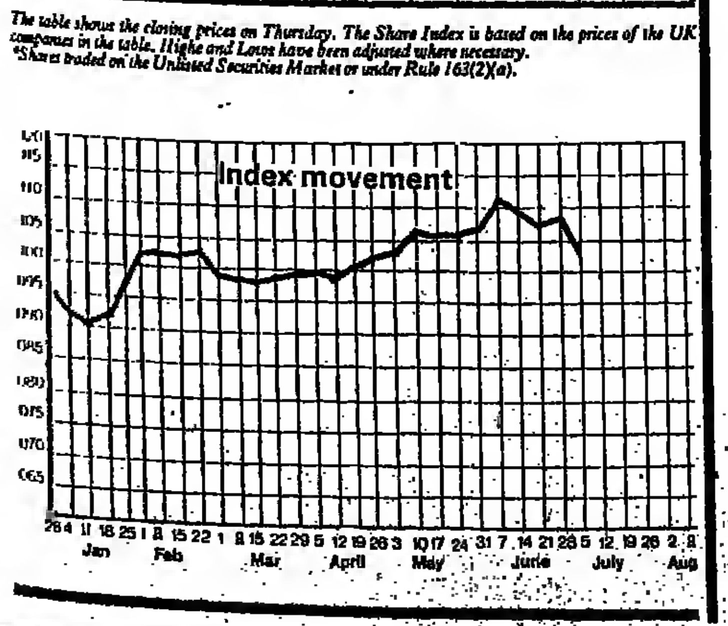
CW SHARES TABLE

Date 8/7/82 Index 183.77 Change – 4.22

Pence 1982 High	Pence 1982 Low	London Stock Exchange: Stock	Pence: Price	Pence: C'nge
275	151	ACT (App Com) (25p)	166	+ 1
179	150	BOC Int. (25p)	182	– 6
79	18	B. Bov Kent (25p)	28	+ ½
121	101	Chubb (20p)	107	– 2
94	45	Cole Group (15p)	87	–
303	233	C.A.S.E. (20p)	261	– 1
730	445	De La Rue (25p)	465	+20
350	235	Ertel (25p)	318	–
800	525	Ferranti (50p)	800	+57
1331	797	GEC (25p)	1031	+60
62	33	ICL (25p)	39	+ 5
47	41	Kalamazoo (10p)	44	–
310	222	Kode Int (25p)	280	+ 2
305	215	Memec (10p)	266	+ 8
154	118	Muirhead (25p)	154	+ 5
284	218	N'market (1981) (6 05)	240	– 8
690	570	Norsk Data	690	–15
375	285	Office & Elect (25p)	375	+ 8
543	445	Philips Lamp (fl10)	487	– 3
488	348	Plessey (50p)	488	+18
77	25	Quest Auto (10p)	25	–32
494	363	Racal Elect (25p)	466	+ 8
250	171	Rediffusion (25p)	218	–18
453	356	Thorn-EMI (25p)	386	–14
90	74	UC&T (50p)	78	–
		OTHER MARKETS*		
90	80	Bus Corp (10p)	80	– 2
567	418	Comp Serv (£1)	461½	–
182	78	Consult (C&F) (10p)	174	+18
252	245	In Tech (25p)	260	+ 3
80	60	Knight (5p)	60	–
121	112	Miles 33 (10p)	112	–
270	194½	NMW (£1)	114½	–11½
97	43	Rothe & Nolan (10p)	87	+ 3
170	78	ScanData (10p)	105	–18
117	100	Star Comp (10p)	211	–
105	83	Trident Comp (10p)	94	+ 1
116	78	Zygal Dyn (5p)	118	+10

$ 1982 High	$ 1982 Low	US Stock	$ Price	$ C'nge
29¼	18	Amdahl	18	– ½
20¾	11¼	Apple Inc	11¼	– 1½
28	22¾	Auto Data Pro	22¾	– 1¼
31¼	31	Burroughs	32¼	+ ¼
13¼	7¾	Comp Auto	8½	+ ½
18	11¼	Comp Sciences	12	–
18½	12¼	Comshare	12½	–
35½	23	Control Data	23¼	– ¼
36¼	21¾	Cray Research	23	– ¼
63¼	24¾	Data General	25½	+ ¾
48½	12	Datapoint	11	– ½
24½	16½	Dataproducts	17¼	–
81½	57½	Digital Equip	59¼	–
28	18¾	Elec Data Sys	25¾	– 1½
6½	3¼	Gen Automation	3¾	– ¼
38¾	22	Harris	24	– ½
45¼	36¾	Hewlett-Packard	42	– ¾
76	63	Honeywell	68½	– ½
33¼	20¾	Intel	29¼	+ 1¾
66	57	IBM	61¾	+ 1
56	38½	Litton Ind	41	– 1½
13¼	9¾	MDS (Mohawk D)	11½	–
24	18	MSA (Mgmnt Sci)	21½	– 1
18¼	10	Mngmnt Assis	10¾	–
8¾	6¾	Modular	7¾	– ⅛
65	60¼	Motorola	61¼	+ ¼
24½	16¼	National Semi	20¾	+ ¼
64	40½	NCR	51¾	– ¼
28¾	17¾	Perkin-Elmer	18	+ ¼
23¾	16½	Prime	17½	+ 1
38¾	29¾	Raytheon	36¾	+ 3¼
26¼	15¾	Signal	11¼	+ 1½
34	21⅞	Sperry Comp	21¾	–
34½	20¼	Storage Tech	21	+ ¾
29½	18	Tandem	18	– 1½
35	27	Tandy	29	+ 1½
93	70¾	Texas Inst	89½	+ ½
27¼	12½	Tymshare	14¼	+ 1¾
38¾	27	Wang Lab B	27	– ½
9⅛	7½	Wyly	8¼	+ ¼

The table shows the closing prices on Thursday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.
**Shares traded on the Unlisted Securities Market or under Rule 163(2)(a).*



THE COMPUTER SHOW FOR EVERYONE!

CITY HALL, GLASGOW
September 7-9, 1982

As a professional computer user, or first time user, you need to see and compare the whole range of equipment and services available for today's specifiers and purchasers – and what better way is there than spending a day at the first Compec exhibition in Scotland – COMPEC SCOTLAND – the most effective way of bringing yourself up to date with everything the computer industry can offer.

COMPEC SCOTLAND offers a truly comprehensive range: mini- and micro-computers, small business systems, printers, software, terminals and other peripherals, telecom equipment, word processors – as well as the many ancillary services and equipment available.

For computer users, suppliers, systems and software houses, the OEM industry, consultants – and particularly those considering the use of a computer system for the first time – this must be the exhibition for you.

Apply now for as many FREE advance registration tickets that you will need. Clip the coupon now!

Please send . . . . . . FREE advance registration tickets for COMPEC SCOTLAND to:

Name ....

Job title ....

Company ....

Address ....

Return to: COMPEC SCOTLAND '82 Tickets, IPC Exhibitions, Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ.

CIW

Easy-wipe PROMs lead on to self-programming systems

MOST of the interest in semiconductor memories has centred lately around 64K dynamic RAMs and their imminent 256K big brothers. While the 64K chips are now starting to appear in quantity and with higher performance, and appear to be on the way to becoming the first semiconductor market sector to break the billion-dollar barrier, things are happening in other parts of the memory world too.

One area likely to be extremely important in the future, certainly in Intel's view ssy$ northern European memory marketiog manager Tom Seonhauser, is electrically erasable PROMs – EEPROMs. These are programmable ROMs that can be reprogrammed using a voltage pulse, rather than needing to be exposed to UV light to erase the memory contents.

Present devices available in quantity require externally generated high voltage pulses for altering date and extra circuitry to hold the address and dats signals.

But receot developments are changing this. Both Seeq Technology and Xicor have parts needing only a 5-volt power supply and incorporating some or all of the latches and timing circuits oo the chip. This will make the chips much easier to build into microprocessor systems.

Intel, whicb is the only company shipping in volume, says Seonhauser, has its 2817, which ooly needs s timing capacitor and a steady 21-volt supply. Its earlier part, the 2816, needs an externally produced shaped pulse. A 5-volt-only part is on its way "io the near future" adds Sennhauser, to be called the 2817A. All these devices are 16K parts.

Costs are falling fast too, and Intel reckons that in 1984 the 2816 EEPROM and 2716 EPROM prices will cross over. This will only happen for this 16K device – which Intel Is shipping in tens of thousands a month and which is second sourced by National Semiconductor and Motorola.

Japanese manufacturers – dominant io other memory market sectors – do not feature in the EEPROM stakes yet. Hitachi did have a part, but has withdrawn from the market for the moment to redesign it to a standard pin-out, ssys Sennhsuser.

Reasons for the importance of these devices range from the rather mundane, though most obviously financially valusble, reason of giving non-volatile memory that can be altered remotely, to the more exciting prospect of self-programmable systems, able to adapt to changing circumstances.

Because an EEPROM only requires an electrical signal to alter the information it contains, the cbips do not have to be removed from the system to change the firmware. Changes can be made from keyboards, down phone lines, and so on while the chips are in situ, unlike normal EPROMs which have to be taken out of the system and erased under UV light before reprogramming.

Costs of sending trained personnel out into the field to get into systems and take out or replace the EPROMa are rising, and will continue to increase dramstically, ssys Sennhauser, and users will be better off going to EEPROMs if firmware is changed in a system more than once a year.

Typical spplications to benefit from this sort of EEPROM use as straight replacement for EPROMs include point of sale systema, where price informstion needs to be updated regularly, and in patched programming – where a branch table cootains jump instructions fixing a sequence of subroutines to make up the main program. Putting the brancb table in EEPROM rather than EPROM will greatly ease changing it, and thus the program itself.

Potential applications in self-adapting systems are most likely to come first in the industrial control area. Machines will be made self-calibrating, taking into account wear and cbanging tolerances and altering firmware as appropriate.

CHALKE . . . Aimed at multi-user applications.

Top-end Rair release

BRITISH microcomputer manufacturer Rair bas extended its range of micros upwards. A new top-end system, the Black Box 3/50, gives a faster running speed and a greater memory capacity than the 3/30, Rair's previous top machine, also sold by ICL as its Personal Computer.

The Intel 8085 microprocessor is retained, but now runs at 5 MHz rather than 3 MHz, giving the 3/50 a speed increase of nearly 70% over the 3/30. Memory can now be expanded to one Mbyte – double thst of the 3/30 – through using 64K RAM chips. Up to four memory boards, each carrying 256 Kbytes, can be fitted.

The 3/50 is aimed at multi-user applications, says sales manager Roger Chalke, where higher processing speeds are significant. The machine runs under MP/M II, the multiple-user operating system, as well as Rair's CP/M-plus.

Prices of the 3/50 start at £6,500 for single units to end users, with deliveries from stock.

Rair unveiled a departure from its 8-bit Black Box range at last month's National Computer Conference in Houston. This moves even further upwards in performance than the Black Box 3/50, and is thought to use the 8/18-bit 8088 microprocessor from Intel.

DEC support for upgrade board

A MICROPROCESSOR based printer upgrade board has gained maintenance support from DEC after three years in the market and UK sales of over 1,000.

The DS120 board from US company Datasouth, distributed in the UK by Northampton-based Datatrsde, upgrades DEC's LA36 DECwriter II and now comes with o three-month on-site warranty from DEC. Maintenance for the LA36/DS120 combination is available from DEC throughout the UK and Eire.

The board was developed in 1979, and has world-wide sales of more than 6,000 units. It gives the LA36 increased throughput, from 30 characters per secood to 165, with most of the features of DEC's LA120 printer. It also adds the APL character set and facility for programmsble characters.

DEC hss beeo waty of supporting foreigo equipment in its owo kit. AS DEC's Greg Carlow, a field service manager, says, DEC's objective is to provide support for its own equipment. "A secondary objective is to provide support to customers wherever DEC can, on the range of equipment the customer uses."

Sucb support is oormally only provided on a local office basis. Where there is sufficient manpower with the appropriate skills to cover particular equipment it will do so, says Carlow, and it is rare for foreign kit to be supported on a nationwide basis like this.

But with the Datasouth bosrd, as witb three or four other products, the number of DEC customers already using the upgrade has made it worthwhile for DEC to offer support nstionwide.

Looks static, acts dynamic

AFTER atatic RAMs and dynamic RAMs comes the integrated RAM. Intel is currently sampling an 8K by eight bit part, the 2186, which it describes as an "integrated" RAM or iRAM – a dynamic RAM that looks like a static RAM from the outside.

Refresh circuitry, needed to maintain the information stored in a dynamic RAM by constantly rewriting the contents of each memory cell so thst the information is not lost in the decay of the stored charge, is integrated on-chip, so that to the user the device sppears to behave like a static RAM but has the high density and price advantage of dynamic RAM.

The part will go into volume production in the fourth quarter of this year, and will be priced in the $20 range for quantities of 5,000 units.

MICRO BRIEF

BCPL is available on the 6809

SYSTEMS programming language BCPL has been implemented on the Motorola 6809 microprocessor. The M6809-BCPL package from Martin Saxon in London runs in 40 Kbytes of RAM under the Flex operating system. The SWTP ASMO9 assembler is needed to assemble the compiler output.

M6809-BPCL sells for around £150 and is available now. Code for putting into ROM can be produced using the BCPL-Romcode package, which will sell at £20.

Bumper sales

LEADING Jspanese microcomputer manufacturer NEC expects to double its home sales in 1982. It already claims to supply 45 per cent of Jspan's personal computers, but by the end of the year reckons it will have sold 300,000 of the PC-8000 in Japan alone during 1982.

iAPX prices cut

INTEL hss dropped the price of its iAPX 86/20 and 88/20 numeric data processors by half. They are made up of the 8086 or 8088 microprocessor plus an 8087 numeric co-processor. Volume pricing is projected to drop by half again in 1983. Greater than expected use of the oumeric processor in high volume applications like personal computers and graphic displsys has reduced unit production costs on the 8087.

Standard proposal

NCR has joined with disc manufacturer Shugart to propose the SASI universsl interface introduced last year by Shugart as an industry-wide standard. The proposal made to the American National Staodards Institute covers detailed bardware and software specifications to allow mixing of floppies, Winchesters and streaming tapes without affecting CPU operating system or applications software.

8086 for Q-bus

INTEL'S 8086 microprocessor has been brought to DEC Q-bus users by US company North Atlantic Industries. A dual-height single board is compatible with the Q-bus protocol, but bas the one-megabyte direct addressing range of the 8086 rather than the 60-Kbytes of the DEC LSI-11/2 or 256K of the 11/23.

Paris subsidiary

THE young UK software company Micro Technology and Sharp of France bsve spawned s jointly-owned subsidiary near Paris. The new company, called Micro Technologie SA, will market Micro Tecboology's software through Sharp dealers in the French speaking world.

For Apple III

COBOL programming tools Animator and Forms-2 developed by Micro Focus are to be available through Apple for the Apple III microcomputer. Micro Focus' Level II Cobol, which is compatible with mainframe-level Ansi 74 standard Cobol, is also to be offered as Apple III cobol, to run under the SOS operating system.

UK agent signed

SYSTEMS specialist Microsystem Services of High Wycombe hss been appointed exclusive UK agent for US company Hi-Level Technology. The Emulyzer from Hi-Level combines a PROM emulator with a logic state analyser to allow system development work on machines with microcode words up to 128 bits wide.

Wilkes Computing

Retrographics for your VT100

Maintained by DEC

*Buy complete or upgrade your VT100

- Manufactured by Digital Engineering.
- Tektronix 4010 aoftware compatibla.
- Vector drawing.
- Poinl plotting capability.
- Selectiva erase.
- Alphanumeric overlay.
- Raaler scan technology.
- Green phosphor screen.
- Compatibility with industry atandard software
  :Taktronix plol 10.
  :Issco's disapla.
  :Tellagraf.
- Retalna all VT100 standard faaturea.

Registered trademark Digital Engineering Inc.
Registered trade mark of Tektronix Inc.

For further details write or phone

Wilkes Computing
... House, 72 Prince Street, Bristol BS1 4HU.
Tel (0272) 25921 Telex 449205.

READING

PRESTIGE NEW INDUSTRIAL DEVELOPMENT

23,600 SQ. FT.

IDEALLY SUITED TO HIGH TECHNOLOGY ORIENTATED USER

❇ Reflective glass to office elevations
❇ High office content
❇ Superb specification
❇ Self-contained site

Completion August 1982

All enquiries to Sole Agents:

Consultant Surveyors
9 Castle Street
Reading RG1 7SB
0734 588311

Gibson Eley

Outgrowing your mainframe? Want to offload the overload?

After using a mainframe for a time, you're tempted to pile on more jobs, and plug in more terminals. Until you're reminded that even large computers can be overloaded – with serious drag in response time.

One approach is to pile on main memory and money. But this doesn't solve your problem. It just postpones it. Eventually you reach your financial ceiling. Then what?

Then you're ready for a more sensible approach. Distributing the load with multiple-minis. Assuming you've got all the pieces to talk efficiently to each other and have overcome the slow-response problem – two tasks ideally handled by CTL's I/O architecture – you'll like it.

Until it dawns on you. With all those multiple-managers with their multiple-minis and multiple-terminals, you're due for a multiple-headache when something goes down!

At this point, you're ready to learn that all "multiple-mini" solutions aren't the same. Because only CTL's have MOMENTUM.

Added to a CTL transaction-processing system, MOMENTUM gives you all the resilience you need at a price you can afford. As little as an extra 2% on a £50,000 system. Nobody else offers anything like it.

So you can afford your overload without taking on a new load of problems. Like to learn more? Just post the coupon.

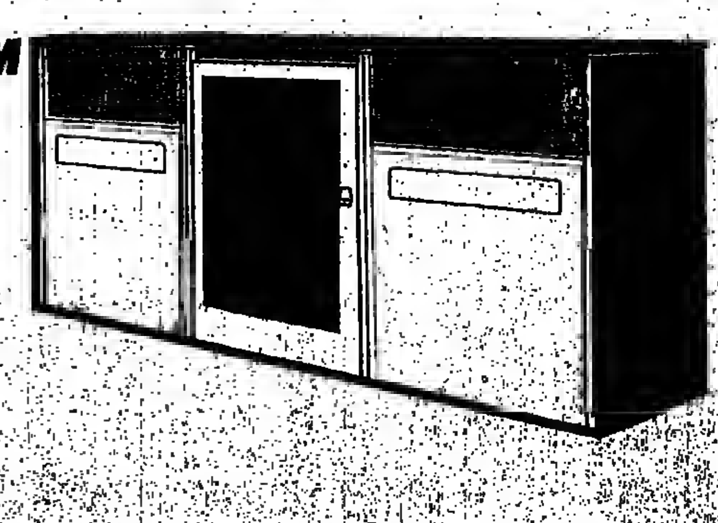
Attention: Roger Fulton
☐ Plcase send a copy of your new MOMENTUM brochure.
☐ Please contact me for an appointment.

Nama
Job Title
Company
Addreaa

Telaphone Ext.

Computer Technology Ltd.,
Eaton Road, Hemel Hempstead, Herts. HP2 7LB.
Telephone: (0442) 3272. Telex: 825052

The Computers with MOMENTUM



CTL Computer Technology Limited

an ITL Information Technology Company

Special launch offer.
Massive discounts on Wabash flexible diskettes.*

Single-sided, single density disks, 5¼" or 8," standard formats, normal prices £16.40 and £19.10.
Box of ten. **£12** + VAT P+P free

Single-sided, double density; Double-sided, single density; Double-sided, double density disks, 5¼" or 8," standard formats, normal prices £23.70, £25.50 and £27.30.
Box of ten. **£17** + VAT P+P free

Action Computer Supplies launches its first media and supplies catalogue, featuring brand leaders at low prices and same day despatch.

Catalogue includes: ☐ Flexible diskettes and accessories ☐ Ribbons ☐ Copying products ☐ Paper (continuous and rolls) ☐ Continuous computer labels ☐ Printwheels and accessories ☐ Cleaning products.

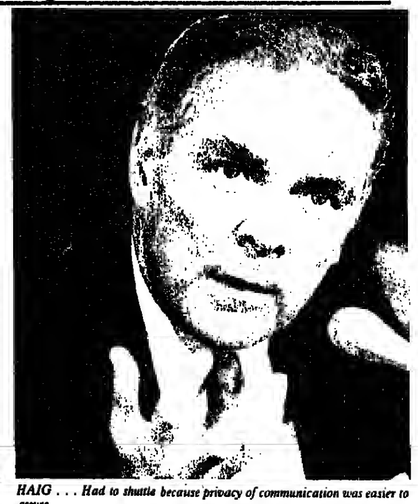
To get your free catalogue and take advantage of our special offer ring 01-903 3921 (Access and Visa cards welcome) or send a cheque direct to Action Computer Supplies, FREEPOST, Wembley, Middlesex HA0 1BR

*SORRY only one box per customer. Offer ends 31 August 1982

DATA PROTECTION

Opposition to government data protection proposals is gathering pace . . . Sociologist Dr Boris Allan airs his views

IT's a brave new world—but the enthusiasm is unrealistic



HAIG . . . Had to shuttle because privacy of communication was easier to assure.

"New forms of communication, and easier access to information, raise questions about the relationship of government to the governed, the responsibilities of professions to their clients, and the privacy of personal data."

Information Technology *(1.11) HMSO 1980*

"Though conversing face to face, their hearts have a thousand miles between them."

Chinese proverb

INFORMATION Technology (IT) has fired many with a touching enthusiasm – unrealistic, but touching. We are told the world will be a very different place with the inevitable changes which technology will bring.

The brave new world assumes such a change in people and society that most commentators who have queried such an inevitable change have concentrated on aspects such as employment, and are only too easily classed as modern Luddites – though for a great deal of the time one gets the feeling that General Ludd has had a bad Press.

Such changes will not easily occur, because the single-minded advocates ignore far more basic social and interactional aspects which cannot be described as irrational.

British governments of all complexions have stood firm on the need of the State to interfere in the public's private affairs. When in opposition, token worries are expressed about the depredations of the agents of the State (be it Customs and Excise, Inland Revenue, the police, or other more secretive agencies). But as soon as the opposition becomes the government,

> **'MPs could deal with constituents' complaints by TV link from their offices instead of through personal interviews.'**

attitudes change. Surely, therefore, the individual's need to protect himself against such depredations in key areas of privacy must be seen to be highly rational.

The 1980 Information Technology report quoted above considered this to be an important question, because as it said, "Power from the use of information, which can now be provided by IT, is great and there is clearly potential for abuse."

The report felt that justifiable fears of such abuse were a major reason why people resisted new ways of collecting and handling data by both government and the private sector.

In April in the Commons the Minister of State concerned with IT, Kenneth Baker, told the House that the new television services proposed in the Cable Systems report (HMSO 1982) would "change the fabric of society". Baker amplified on this familiar statement by saying that doctors soon may conduct surgeries with patients via television.

One must question whether doctors could realistically hold their surgeries by television for complaints of a physical nature – how does a doctor examine a patient through a television screen?

"Press yourself here, and tell me if it hurts"?

Baker has been carried away by his own enthusiasm in the hope of making his own job easier. MPs could deal with constituents' complaints in a similar way, by TV link, from their offices in Westminster instead of through personal interviews.

To deal with one's constituents at arm's length is probably a recipe for losing the next election.

In his book Up the Organisation (1970), Robert Townsend says that conflict within an organisation is, up to a point, a sign of a healthy organisation: "But keep all the conflict eyeball to eyeball," he advises.

By which he means: Do not submerge the conflict in memoranda.

Today we could say "Do not distance the protagonists by use of video channels".

We have had an illustration of the importance of "eyeball to eyeball" contact with the ill-fated Alexander Haig shuttle in his mediation between Argentina and Britain: the US government has available telecommunications facilities which render the shuttle redundant.

It is worth noting that one of the minor scandals of the shuttle was the tapping of a telephone conversation between President Reagan and Haig (telephones are televisions without the pictures).

If this had been a face-to-face meeting, there probably would have been no such intrusion – to overbear a conversation by some telecommunication device is far easier than to overhear a conversation in a room.

Haig had to shuttle partly because the privacy of communication was easier to assure, and partly because people like to be with the other parties to the discussion.

Another aspect of privacy is that of data protection, for which neither of the two main parties of the Seventies can take any credit. One of the recommendations of Information Technology was that "The government should bring forward proposals for data protection legislation without delay."

Recently a White Paper was published on data protection which gave the government's proposals for legislation.

The legislation will not apply to data that need to be safeguarded for the purposes of national security – an ill-defined term with worrying precedents. These exemptions will include some data needed by the police and other security agencies but registered data users who make information available to the authorities in such matters will not be required to register these disclosures.

Some of the information revealed might be incorrect (as much of this information is found to be on examination), so what redress has the individual?

Breach of the data requirement principles is to be a civil (as opposed to criminal) offence, and their purpose will be to ensure that data subjects who have suffered damage because of the breach of the requirements governing data use can secure compensation.

"It is not envisaged that the Registrar will have any role to play in relation to civil proceedings, which will be the responsibility of the individual who alleges he has suffered damage."

So, yet again, the State has not taken seriously the right to privacy of the public. In the State sector, complaints about data systems, which allege injustice "caused by maladministration" can be referred to the appropriate Commissioner for Administration (or Ombudsman).

This threat is not likely to cause many public authorities to lose much sleep. The number of local authorities who have ignored the Commissioner's recommendations is growing.

The Court of Appeal on May 6, 1982 confirmed an order which allowed the police to freeze the bank account of an accused person, until that person's trial. This means that if a person fears the law, the one place not to keep the money is in a bank account. In what is supposed to be becoming a cashless society, the safest place to keep one's money – if one fears the police, or the Inland Revenue – is in money. With the great, but unknown, size of the unofficial economy many transactions have to be in cash.

Travellers to the US who go outside the main cities will often find new insights into the famed US cashless society. Many such travellers encounter great difficulty in changing even American travellers cheques in the more rural parts of the country – cash is the normal medium of exchange.

The growth in the US cash economy is such that in the last 20 years the amount of currency in circulation has approximately quadrupled. This quadrupling is the equivalent of an annual rate of inflation in the amount of printed money of about 5%.

If, as the data protection proposals seem to suggest, the Inland Revenue, or Customs and Excise, can obtain information from your bank – by law – without your permission, the implication is clear.

Privacy is very difficult to ensure in a society dependent on communication devices because computerised databanks can intrude on individual freedom far more easily than the individual can on theirs.

In a wired society it is not straining technology too far to suggest that while you are watching them on your console, THEY might well be watching you. Until governments begin to take the problem of privacy seriously and not indulge in an international window dressing, the prospects of a wired society are low.

Kenneth Baker may want to talk to his constituents at long range by television, but a wired society requires the whole-hearted acceptance of a communications terminal in the home paid for by the householder, and needs the question of privacy at the top of its list.

ACT Sirius 1

See us at the Personal Computer World Show The Barbican 9-12 Sept. 1982

The ACT Sirius 1 is the UK's best-selling 16-bit personal computer and the only one with such a large choice of 16-bit software – business and scientific programs specially developed to take advantage of the high speed 16-bit Intel 8088 microprocessor at the heart of every Sirius.

Combine the advanced Sirius 1 with this faster and more powerful software and you can see why more and more business users are making Sirius their number one choice.

UP TO 896 KBYTES RAM

128 Kbytes of RAM memory as standard easily upgraded to a massive 896 Kbytes ensures plenty of capacity for fully fledged business software.

The standard Sirius has 1.2 Mbytes of floppy disk storage, with 2.4 Mbyte disks as an option. And 5 and 10 Mbyte Winchester disk drives are scheduled for early introduction.

And built into every Sirius is an audio decoder, a revolutionary new facility that can play back verbal messages and prompts to assist non-computer people get acquainted with the software more quickly.

NEW 16-BIT SOFTWARE

All the big names in applications software are on the Sirius: ACT's Pulsar for accounting, Wordstar for word processing, MicroModeller for financial modelling and SuperCalc the "spread sheet" program.

Price £2,395

Plus the exciting SELECT the only word processor that includes a built-in 90 minute teaching facility.

And more than 100 top software companies are currently developing specialist packages for every business and profession.

MORE LANGUAGES

The Sirius has Microsoft's BASIC (interpretive or compiled), CBASIC, several COBOLs, three PASCALs and FORTRAN.

And it is delivered with the two industry-standard operating systems at 16-bit level – MS-DOS and CP/M-86.

The benefit? Programmers are making the Sirius their first choice computer for business software development.

COMMUNICATIONS

Available NOW are the facilities required to communicate directly with other computers. Two independent RS232 ports and parallel and IEEE 488 ports are included as standard.

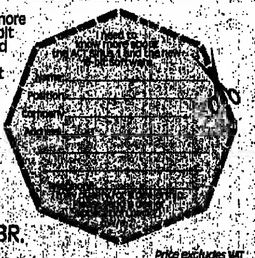
SUPPORT

ACT has a truly professional network of systems dealers, hand picked for its knowledge of the business environment. Further backing is available by way of a dedicated Sirius Training Centre, run by ACT and open to all.

ACT SIRIUS 1 – THE COMPLETE 16-bit personal computer.

To know more about the 16-bit ACT Sirius 1 and its exciting range of 16-bit software, clip the coupon and return it to:

The ACT octagon encapsulates our philosophy of a single source for computing solutions. ACT products include personal computers – business systems – turnkey minicomputers – software technology – computer engineering – consumables and bureau services. The eight ACT companies are each leaders in their field and are wholly owned by Applied Computer Technology Holdings p.l.c., one of Britain's largest and most successful computer companies.



ACT (Sirius) Limited,
FREEPOST, Halesowen, West Midlands, B63 1BR.
Or call for details now on **021-501 2284**

Price excludes VAT

GILB'S MYTHODOLOGY

Principles of Infotecture–7

It will pay to capture those errors early

Tom Gilb is on independent consultant, lecturer and author on computing topics.

THE Seventh Principle of Iofotecture is: It will usually pay off to discover weaknesses in your proposed design techniques at the earliest possible point in time.

Far too much atrention is being paid to finding errors in programs during testing phases and by reading "structured" program texts.

As the TRW Snftware Reliability Study (North-Holland) showed, this late error-finding approach may be economically unsound. The study traced errors which had been corrected by means of program maintenance, in four large systems, to the source of the error. On the average 62% of the maintenance errors had occurred before program coding had taken place.

In other words, there was an opportunity to capture the design error at an earlier point in the development process.

Capturing errors at earlier stages has obvious management advantages – more freedom to select people, time, and tools to correct the situation. But there is also a clear economic and work-power productivity advantage in capturing errors at early stages of development.

Studies carried out by IBM on real and large systems, with corroborating evidence from TRW Systems and General Telephone and Electronics (GTE), shows that the cost of repairing an error in system development specificatfon increases by an order of magnitude for each further stage of development which the error is allowed to slip past.

IBM Santa Teresa Labs reported in 1979 that if program coding errors were not caught until after the testing stage the correction costs were 23 times higher than the corresponding errors which were caught during the one stage earlier code inspections. They also reported that errors which slipped through to the field, but which had originated as a coding error, cost IBM 67 times as much to repair as did the same class of errors which were caught at the code inspection stage.

This, by the way, is a powerful argument for the use of Fagan's Inspection at all possible earlier stages of system description: the error correction custs are far lower.

One of the temporary restrictions which IBM Santa Teresa Labs reported to me on extending the concept of strict quality control (stricter than traditional review techniques – as strict as Fagan's Inspections) to the many higher level forms of design documenistion, has been language. The design language used hitherto has been too unclear to allow the kind of objective "proof-reading" comparison which characterises Fagan's Inspection. For this reason IBM has been examining stricter language constructs at the pseudo-code level and within the framework of my Design by Objectives methods (explained in earlier columns) and Software Metrics (Studentlitteratur, Lund).

One striking example was the application of one hour's amateur inspection which compared the project leader's "system attribute specification" using software metrics, with the New York Electricity Company's presidential goal for the project. Twenty-two glaring differences were found at this stage.

It is worth throwing on the fire the consistently recorded facts, which surprise most professionals, that (according to IBM studies and others) conventional program testing is only capable of identifying 30% of the actually existing errors, while Fagan Inspections are capable of identifying a full 80% of the available errors. Combined with the economic benefit (order of magnitude cheaper to repair), the Seventh Principle of Infotecture looks like a big winner.

Tom Gilb

HUMAN TOUCH

One man's debit is another man's credit

Cliff Dilloway is an independent consultant specialising in accounting software, taxation and payroll.

THERE is only one accounting joke. It concerns an aged accountant whose wisdom was renowned and who was often consulted by his colleagues. When consulted he always looked at a faded scrap of paper that he kept in his top left-hand drawer and which obviously contained the source of all his wisdom.

When away from his desk that top left-hand drawer was always kept locked, so when the aged accountant eventually died his colleagues burst the drawer open to obtain access to the source of profound wisdom.

Tbe faded scrap of paper said: "The debits are on the window side".

That this joke should appeal to accountants shows that they, as much as anyone else, have no easy answer to the question of whether an entry is a debit or a credit.

The difficulty is that this question is not phrased properly. Every debit must have a credit. So the question that has to be resolved is where does the debit go and where does the credit go?

My own mnemonic is to remember that cheques come in as debits on the left of the cash book and go out as credits on the right. In other words, work from right to left as with anything else and just remember that debits are on the left.

That rule is satisfactory as far as it goes, but it does not tell you where the other side of the cash transaction has to be posted. The rule establishes whether the other side of an accounting entry is a debit or a credit, but not what account it should be posted to. Which account we must leave to another day, but Figure I shows the ledger the entry should be made to. The entries are connected by the letters (A), (B), (C) etc to show the two sides of an entry.

For example, the debit entry of cheques received in the cash book is posted as a credit in the sales ledger.

An example of how one man's debit is another man's credit is between the cash book and the bank statement. Cheques received by a customer are his debits. When paid into the bank they are posted as credits to the banks' customers' accounts and that is how they appear on the bank statement.

Cliff Dilloway

	DEBIT	CREDIT
Sales Ledger Customers' Personal Accounts	Invoices issued (B)	Cheques received (C)
General Ledger	Analysis of Purchases (assets) (A)	Analysis of Sales (and liabilities) (B)
Purchase Ledger Suppliers' Personnl Accounts	Cheques paid out (D)	Invoices received (A)
Cash Book	Cheques received (C)	Cheques paid out (D)
Bank Statement as in the books nf the bank	Cheques Paid i.e. met	Amounts pnid in

Figure 1.

FOCUS

Everyone's getting in on the micro act

THE long-standing guardian of the data processing professional, the IDPM, intends to get more closely involved in microprocessing. For a start, the association is calling for greater compatibility in such matters as standard operating systems, eight to 16-bit upgrading paths and floppy disc equipment.

Surprisingly, the IDPM standard list does not cover the major area of disquiet, that of micro distributors. Micro outlets include manufacturers, distributors, systems houses, high street stores and even mail order. Before long, Exchange & Mart and NME will probably be featuring secondhand micro sales.

A leading authority on micro retailers, Read-Out Publishing, has estimated that there are already over 1,500 micro stores and distributors in the UK – a figure which is escalating daily.

The growth is not unexpected, given the forecasts of the London Stock Exchange. Brokers Smith Keen Cutler suggest that the present 30% a year growth in microcomputer sales is opening up major opportunities, which even now is not fully appreciated by the public.

If this is the case, then the public must be highly unobservant with micros on display at the local video rental store, chain chemist, book shop and the local library.

Whether the marketing of micros in such establishments is a correct and healthy operation, however, is open to some doubt and disquiet. Are major book shops, which would presumably hesitate to sell domestic vacuum cleaners or deep freezes, competent to contribute useful micro advice?

In their haste to establish widespread sales outlets, micro manufacturers it seems, have adopted the motto: The More the Merrier. Selection criteria appear to be influenced more by available shelf space than available expertise.

Business user micro awareness levels probably begin when the equipment is being unwrapped and powered-up. Instead of handholding, the users find their hands holding an instruction manual and a soldering iron. That many users would be happy to pay a premium price for a premium service is one which has already been acknowledged by Digital Equipment.

A recent US survey has revealed that within the next five years, over half of all office workers will have a personal micro. The challenge for the UK should be picked up by the IT Year organisers. Rather than floating micro trains, vans and race-horses around the countryside in a manner reminiscent of Wells Fargo, the organisers should attempt to establish an IT approved data centre in every major town.

Balancing the displayed range of hardware should be adequnte supplies of suitable software and professional advice. Store personnel should be limited to those holding a NCC proficiency test, two years' experience working in a data processing environment or membership of an approved micro club.

Alan Simpson

DOWNTIME

Whatever happened to System 36?

IBM's small business users have been led up the garden path – and left on the fence. These faithful users were told they would find in the garden a machine to plug the gap between the existing System 34 and the more powerful, but incompatible, System 38.

This machine, they were led to believe, would be called System 36.

"IBM is being obnoxiously coy about the machine," said a large-scale multi-national user of System 34s. "We were led to believe that it would be announced in the first quarter of 1982 but this was deferred to the second quarter because of IBM reorganisation."

Well, the second quarter has been and gone, and where is System 36? Nowhere to be found.

So what sort of reorganisation is this?

Anyway IBM, which prides itself on never talking about anything yet to come oo the market, has declined to confirm or deny the machine's existeoce.

Still, there is some consolation for deserted users of the System 34. Beyond the garden fence lies a healthy young orchard of Japanese plug compatibles. Just give them a year, and they will bear fruit.

Anti-British actions

IT seems that computer users in the British public sector will not be allowed to make up their own minds about which computer to buy when US-owned companies are in the running.

No fewer than three actions are either planned or current against public sector organisations for choosing a British-made mainframe of distinctly orange origins in orders where the Americans thought they should have the contract.

In one instance IBM is suing, and Sperry Univac is reported to be planning to sue the Severn Trent Water Authority, so presumably Sperry will wait on the outcome of the first action to decide on its own course. Burroughs has its own plana to sue Oxfordshire Regional Health Authority.

The serious side to this business is that of preferential procurement. This is outlawed by the EEC, and that, presumably is why the actions are being brought. However, the English High Court hardly seems to be the place to bring this kind of case.

On the other hand, the systems in question would probably be up for their next renewal before the EEC sorted out the mess. And given the recent performance of some of the claimants, that might be a mite too far into the future for comfort.

White world

THERE is no truth in the rumour that IBM is setting up a sideline in white shirts.

It all began when IBM said it could not provide enough staff to support all its systems in the US. Why? Because there were not sufficient white shirts to go round.

In the US, IBM insists that staff wear white. And come the summer, when sticky necks and smelly armpits dictate that white shirts be frequently changed, shops run out of them.

Especially when all the employees of an organisation the size of IBM wear them.

Chad

The test-tube computer

MY Dad once told a gullible son that we would all be either computer programmers or molecular biologists by the year 2000. I still think he was right.

But how right he was is only just beginning to emerge. For the question is now being asked: When will we have the first test-tube computer?

A molecule that can exist in two states to represent a computer bit of information has already been synathesised in the States. An attempt is being made at Mississippi University to make a molecular diode, to allow curreot to pass in one directioo, but not the other.

Ooe K of such molecular components will, would you believe, fit into a fine a microo long!

The romance of words

"A PROPOSED revision to American National Standard X4.13-1971 has been drafted by X3 Technical Committee X3B10, Credit/ID Cards."

Now what the world is this? I shall enlighten you. It is the first sentence of a Press release telling us that the American National Standards Institute (Ansi) proposes to change the format of financial transaction cards. There is no indication what financial transaction cards are being talked about, or why anyone should want to change them.

And does it not strike you what marvellous lyrical names these divisions of Ansi all have? There is X3J3, the Fortran committee, X3J4 the Cobol Committee, and now X3B10, the Technical Committee proposing a change to Standard X4.13-1971.

What a dangerous job we have here at Computer Weekly, treading gingerly through minefields of acronym, abbreviation, tautology and cliché. I think we do rather well to deliver such a readable paper after all that...

Chad

10 YEARS AGO

From Computer Weekly of July 13, 1972

THE Department of Trade and Industry issued statistics on the UK computer market showing that in the first quarter of 1972 output was at its lowest level for more than two years, deliveries nf hardware were similarly depressed and exports were at their lowest since the second quarter of 1969 . . . A further step towards the computerisation of firearms was taken with the publication of LAMSAC's second report on the subject, which recommended the use nf a standard code for specific items common to firearms registratins . . . IBM UK announced a new terminal, the 3780, to supplement the existing 2780 . . . A rise in the level of support for computing science research projects from £500,000 in 1971-72 to £2 million by 1975-76 was the major recommendation by the Computing Science Committee of the Science Research Council . . . In a deal which was unusual it only because it involved a UK computer company taking over a US competitor, Standard and Chartered Leasing Company acquired, for £1.7 million, the UK computer leasing and broking interests of Boothe Computer Corp to trade under name of S. & C. Leasing.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, July 15, 1982

BTG asked to defy gravity

THE problem with the British Technology Group, is not the BTG itself, but the government and the objectives it sets for the organisation. The objectives are reminiscent of nothiog so much as the Pushmepullu, that ridiculous animal in the Dr Doolittle films.

The BTG is required to make a rate of return on invcstment of 13.07%, something the bluest of blue-chip companies find all but impossible.

At the same time it is required to invest in projects that, to put it simply, blue-chip commercial operations would not touch with a barge pole. As if that weren't enough, the group is required to treat its investments as losses in the year in which they are made, but to use the following obtuse formula to calculate the profit in the year in which the investments are realised:

$$\Sigma R + C$$
$$\Sigma C \text{ (lr/lc)}$$

Hardly surprising, then, that many of the BTG's senior staff havc trouble understanding their own accounts, much less some of the unfortunates required to report these accounts to the public.

Even BTG chairman Sir Frederick Wood put the loss at £56 million for last year, when in fact the group lost £44.4 million.

The first figure comes from what amounts to a subsidiary account, the latter from the consolidated or final accounts of the orgnisation.

This sort of confusion makes it easy to see why the grossed up start-up costs of the United Peripheral operatinn in Winsford, £32 million, wcre overlooked.

But a costly project like that is surely a major computer industry cvent.

Why have we and the world heard so little about UPL?

And while we arc on about it, how can a public body calmly lose £34 million on an operation like Nexos, the equivalent of creating 1,360 jobs at £25,000 each, without anyone calling for some form of inquiry?

On the basis that any sttempt to lay blame is futile, do not those who paid the piper – the public – at least deserve to know what lessons have been learned?

This is not to say or imply that the BTG should not make losses, simply that its operations should be far more open to the public who pay for them.

Most of the group's problems stem from the fact that the government is trying to make the organisation defy financial gravity by making a high return on capital in investments that commercial organisation will not touch.

Funding for starters

LESS than a year ago this paper launched the first computer industry financing conference in the UK. Run in conjunction with the merchant bank Singer and Friedlander, it gave eotrepreneurs in the industry an opportunity to meet financiers face to face. And last month Computer Weekly and Barclays Bank sponsored another financing conference.

The object of both conferences was to strengthen the links between people and institutions with money to lend, and computer industry companies needing funds. It was hoped that a measure of change might be effected in what was generally reckoned an unsatisfactory situation in relation to the early funding of young companies in the UK computer industry.

If the momentum for change which began at the two natiooal conferences is to be sustained, it is essential that meetings such as those organised by Heseltine Moss last week in Reading (see page 9) should take place around the country.

Getting UK funds behind UK computer companies has wide implications and employment is one of the most important.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Graeme Hewson of Uxbridge, Middlesex, who wins £5.

The transputer la the brainchild of Inmos directnr, Iann Barron. It is a microchip consisting of a small central processing unit and a memory storage unit. The advantage is that it cao be cooneeted to other chips performing other functions. Howeyer it will not be in production until 1984 at the earliest.

Sunday Times

LETTERS

Some points on Codasyl database

A PEW important points need to be made about the artiele by Martin Hammer on a Distributed Codasyl Database (CW, June 17) since there are alternative approaches which need to be publicised.

Pirstly, Hammer's article appears to imply that a single schema exists although it is unclear whether an identified copy should exist at each node. There are many cases of distrihuted database systems where there is the requirement for a number of different schemas. This is m take account of different functions occurring at different nodes.

The most general way to look at distribution is in fact as a system of co-operating databases each with its own schems and with the need for a management co-ordination function which could be centralised or federal in nature depending on the environment.

Secondly, Hammer has not applied his ideas to the latest Codasyl specifications which separate storage information from the schems. Several products (ie ICL/IDMS and DEC VAX-11 DBMS) now incorporate such a separation. Following Hammer's approach all extensions could be made to the storage schema. However, this confuses local control of efficiency with geographic storage distribution, the latter involving considerations other than efficiency.

In practice there is a strong case for an architecture which allows a special geographic schema to handle distribution effects separate from both the schema and the storage schema at each node.

Thirdly, there is no need for modifications to the DML to handle distribution. A geographic schema could contain details of distribution in terms of application data item values and current DML could be utilised in like terms. For example, rather than storing a record, say a customer account record, at a particular node, which would correspond to a bank branch, it would just be necessary to ideotify the bank branch, for example by a data item value in an explicit bank branch record and then the geographic schema would determine the actual node for storage.

These points are based on work in progress of the BCS/Codasyl DDLC Data Base Administration Working Group (DBAWG). The current state of affairs is that a schematic architecture is close to finalisation and work is shortly expected to begin on syntax which it is hoped will eventually be considered formally by Codasyl.

A paper on this architecture is being presented at the British National Cooference on Databases in July.

Dr G. M. STACEY
Chairman, DBWAG
Edinburgh Regional Computing Centre.

LANs have their place in the office

I FEEL I must take issue with the closing remarks made about Local Area networks (LANs) in David Henson's article (Porget the "Paperless Office", It Just Isn't Going To Happen – CW, June 24).

In an otherwise inoffensive piece, he answers some well-worn statements with acknowledged good points, but alas, he concludes by dismissing it, like a spoilt child dismissing the game of marbles as "no good", because he hasn't got any.

Yea, just like any technical innovation, some LANs have their problems, but to suggest that they are responsible for giving office automation a bad name is taking things too far!

Necessity, they say, is the mother of invention, and in the harsh business world executives seeking increased productivity and economy have been forced to move their battlefield from traditional factory and administrative data processing functions to the office environment. As a result they have exposed the financial and operational weaknesses of conventional "one-box" technology.

The simple fact is that, when all is considered, the concept of the LAN is that bit closer to the theory of information processing systems, and while in some cases it is worthwhile bucking the laws of nature to make progress, why do it when you don't have to?

This is not to argue that LANs are the office automation panacea but merely to point out that like the mainframe computer, the minicomputer, the shared logic computer and the micro, LANs have their place and, if anything, are making office automation more acceptable.

Datapoint is accredited with being the world's leader in LANs, having over 4,000 installed worldwide, 120 in the UK, but there are many other successful suppliers that bear witness to the useful contribution the LAN makes.

Go on, admit it! – marbles can be a rattling good game for all the family!

DAVID FAVRE
Marketing Consultant
Datapoint (UK) Ltd
London NW10.

Great oaks from little Acorns

WE are a children's playground in central London and during the six weeks of the summer holidays we can have as many as 300-400 children duriog the daytime taking part in our summer holiday project.

Sporting and craft activities are reasonably well covered but there is a zero input of mind-stretching technology because quite simply we don't have any equipment.

Is there anybody out there who has an Acorn or an Apple (or a Cray 1) or something similar who would be willing to lend it to us for six weeks so we could run computer experience sessions?

I should emphasise that we do have access to experienced computer personnel who are willing to run the sessions; we do have a secure room in which to keep the equipment; and of course we would accept full responsibility for it.

Our summer programme starts on Monday, July 26, and finishes on Friday, September 3. It is aimed at local children of the area and we do not charge for activities if at all possible.

HELEN HAYS
Administrator
Coram's Fields and the Harmsworth Memorial Playground,
93 Guilford Street,
London WC1N 1DN.

Liveware File by Don

Mapse, Apse and Kapse

IN the article on the government's call for a software initiative (CW, June 24), you state: "A little confusion, to say the least, is caused by the terms MAPSE and APSE"!

I would hate to add to this confusion by mentioning KAPSE (Kernel APSE) but would like to point out that, in all the designs I have seen, the database manager is included in the mapse.

However, I would like to suggest that, although "Absolute Programming Systems Environment" is a rather neat expansion of APSE, the US Department of Defence, among others, favours the rather unimaginative meaning Ada Programming Support Environment.

Please do not feel that I dislike your interpretation but it may lead to a proliferation of new acronyms like NAPSE (Nearly Absolute . . .) or VAPSE (Virtually Absolute . . .).

A. C. HUGHES
Software Research & Development Group
GEC Research Labs
Marconi Research Centre
Chelmsford, Essex.

IBM denial

CONTRARY to the statement in your editorial (CW, May 27), IBM has not joined the Japanese Fifth Generation project.

M. D. STOTT
External Communications Manager
IBM
Portsmouth.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

Duplicated mail

I AM surprised to read (CW, June 24) that both you and a reader, Boris Allan, of Stockport, think it amusing, surprising or remarkable that any organisation should say: "If you receive more than one envelope . . . hand sorting is more expensive than postage."

He has received £5 for reporting it as a "strange saying"! If you have not received these words with your mail before now you aren't on the same sort of mailing lists that I'm on.

At the risk of stating the obvious: many charities for example have a list of people who have donated in the past and a list of people who have bought Christmas cards. They send out appeals to both lists.

Many firms, similarly have two lists of porential customers, compiled from different sources. It really is cheaper to send some people two communications than cross-reference the lists and remnve duplications. It *would* have to be done by hand.

Have you ever thought what an irregular format a name and address file has? It's quite fun to sort one. The computer could only identify exact duplicates, and not recognise us being the same:

Mr Boris Allan, 13 Acacia Street, Stockport.
Mr B. Allan, 13 Acacia Street, Stockport.
Mr. B Allan, 13 Acacia Street, Stockport.
Mr B Allan, 13 Acacia Street, Stockport, Cheshire.
Mr B Allan, 13 Acacia St., Stockport.

To say nothing of
Mr B Allen, 13 Acacia Street, Stockport, which I guess he's been addressed as before now.

I get my name misspelt on at least 25% nf casual mail. Don't blame my bad handwriting – it's printed in block capitals at the top of my headed notepaper.

(By the way, if any reader wants to write to Mr Allan I made up the 13 Acacia Street – full address was not given.)

Obviously neither the Editor oor Mr Allan has worked with an organisation that was mailing to large numbers of people on more than one list, or they would know for sure that it *does* cost more to remove duplication.

The only public relatioos opportunity the Dutch publisher missed was to say: "If we have sent you more than one of these brochures we apologise for any irritation caused and ask you to pass the duplicate/s on to a friend."

JEAN M. K. DUFTY
Sale, Cheshire.

Elegant system

I WISH to correct a possible misunderstanding conveyed in Boris Sedecn's interesting article on Compec North (CW, July 1).

At Delta Data Systems we commend the CP/M based Wordstar word processing package to users of our Delta 2000 series of intelligent workstations. Wordstar is available for a wide variety nf CP/M based microcomputers, many of which have only basic keyboard facilities. Thus operator selected control functions normally require multiple key strokes. To streamline the use of Wordstar, many of these are now implemented through a single key depression on the Delta 2000 series.

Our opinion of Wordstar is that of so extremely elegant word processing facility which provides useful benefits to users of the Delta 2000 series of intelligent workstations, particularly when in Burroughs, DEC, IBM or ICL networks.

C. G. HANMORE
Marketing Services Executive
Delta Data Systems
Welwyn Garden City
Herts.

OP SPOT

The decision to raise standards usually affects only new projects, says Brian Pugh. The logic is fallacious . . .

Ops managers need to practise critical analysis

KIPLING defined the basic elements of learning as "six honest serving men" – What, Why and Who, Where, When and How. They are tools which, when put to work in areas of which we have knowledge already, form the basis of improvement.

The technique is known as critical analysis, and is something that operations managers should practise regularly.

Critical analysis is used extensively in organisation and methods studies when, during the course of an investigation, every activity and every aspect of that activity is questioned as to meaning and method.

Anything considered inessential is eliminated to prevent its incorporation into the redesigned system or restructured organisation. In engineering the technique is known as value analysis.

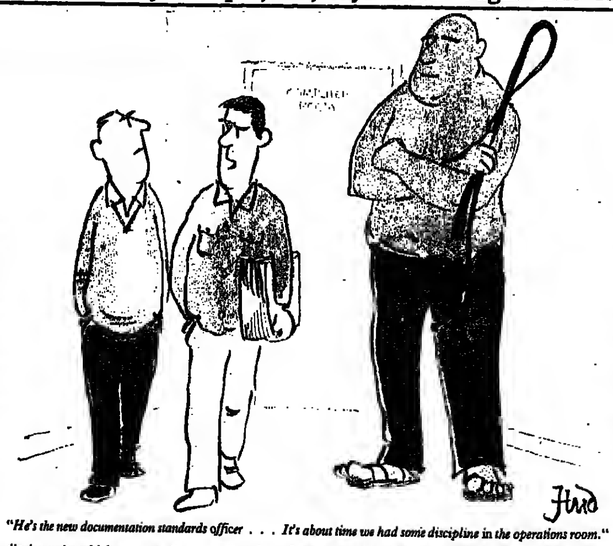
Because many systems analysts came up through the ranks of programming, they have never learned this important discipline. As a result some systems not only are badly designed from an operations point of view, but do not do justice to the requirements of the user, nor do they enhance the status of data processing within the business.

Recently I encountered a new sales ledger system that had been designed in-house to replace one that had been running for 12 years or more. The old one was a brought-forward balance system run in batch mode.

The first management requirement was for an open item ledger which would produce an ageing debt report. If the data processing department had had a higher credibility rating this could have been challenged. The nature of the business was "cash with next order", and because the majority of customers submitted weekly or fortnightly orders, that should have been the extent of their credit.

However, the control of credit had got out of hand, through no fault of the accountants, and the problem was compounded by a few large and unprofitable customers who became notoriously slow payers. Management, instead of tackling the problem, decided to build a system around it.

The second requirement, at the instigation of the DP department, was that cash reconciliation should be interactive. There appeared to be some initial justification for this because it would make the user's job easier. But things went disastrously wrong in the early life of the system, and totally destroyed the user's confidence in it for a period of time. There was also an additional cost of providing visual display units which was not offset by savings elsewhere.



"He's the new documentation standards officer . . . It's about time we had some discipline in the operations room."

But it was in the overnight batch run following the daily transaction processing that poor system design was highlighted in a dramatic fashion. The batch run was necessary to post invoice records, generated in batch mode, to the ledger. The new batch system took three times as long to process as the old one.

Because operations were not involved in any way in the design and testing of the programs, this ludicrous state of affairs did not become apparent until the first production run. If operations had been included in the role of operations analyst, and if critical analysis techniques had been applied, there is the chance that the eventual system design would have been of a better quality.

As it turned out the user was outraged when he saw both his increased costs and the havoc caused to established schedules by the additional processing time.

A blitz on the system resulted. Coding and in some cases whole programs not considered absolutely essential were jettisoned in order to reduce the overall run time to a more acceptable level.

Lessons can be learned from this example. The quality of systems design, as well as their operability, must be raised so that the credibility of DP becomes high enough to constructively challenge corporate management assumptions. The quality of the operation can be raised by constantly subjecting all aspects of it to critical analysis.

The subject of operations involvement in new systems design has already been dealt with in these columns. While this is essential for the future working of the department, impovement to existing systems must not be overlooked.

It is unfortunate that whenever a decision is taken to raise standards, it is only applied to new projects. The sheer volume of existing jobs precludes retrospective action in the minds of most managers.

The logic of this is fallacious. If a job has been in existence for the past few years and it is to continue running for the foreseeable future, then a re-examination of its function will pay dividends.

Those six honest serving men could be the most productive members of your staff. Apply them to every aspect of the operation and then challenge the answers to see if they are valid.

- What is the purpose of a particular program, and is the purpose achieved to the user's satisfaction?
- Why is the purpose considered necessary, and is it still relevant to the needs of the business? If there is output does the recipient use it? What would happen if the program was run less frequently or not at all?
- Who prepares the input, and can it be supplied more efficiently from another source? If it is keyed in can it be obtained from an existing file? Can the data capture method be improved? Who receives the output – should the number of copies be increased or reduced?
- Where is the program run, on a central machine or a remote one? Is it run on one CPU or on several? Will the alternatives prove more beneficial? Should batch validation programs be run at the point of input or the point of processing?
- When is it run, and can it be run more effectively at a different time or in a different sequence in the schedule? Should security be run at the start or end of a day or immediately prior to updates? Must the program be run at a specific time or can it be moved to an off-peak period?
- How is the program initiated, by central or remote operator, by a user or another program? Is there a better way of initiating it?

This form of questioning can be applied equally to individual programs, suites of programs, tasks performed by each member of the staff or to hardware.

In seeking the answers never accept one containing the word "because". This word is always used to explain why something cannot be done. The results of a critical analysis should always outline the expected effects of all the alterative courses of action. Then decisions can be made on the basis of which effect is most desirable.

The action necessary to pursue a desired objective may not always lie within the capability of the operations department. Requests for resources may be required of the systems and programming personnel, of engineers and sometimes of users.

But the operations manager and his team are the only people who can take the initiative in this kind of investigation. Systems departments are too preoccupied with new projects to worry about existing ones unless something is radically wrong. The user is too timid or inexperienced to examine the workings of his system.

The operations manager must embark upon such a programme to combat deficiencies in the original design, to eliminate the unnecessary expenditure of resources and to ensure his staff are most profitably utilised. A re-appraisal of this kind would start slowly reviewing one thing at a time, gathering momentum with experience. The order in which items were reviewed would be determined by the composition of the workload.

It is only by consistently subjecting the mechanics of the operation to a constant re-assessment that efficiency can be maintained at peak level.

COURSES

■ AN introductory course on Prolog is being offered by Expert Systems who describe it as "a Fifth Generation language". The one-day course will be held on July 29, August 12 and September 2. Details phone 0865 42206, or write to Expert Systems Ltd, 31 Alexandra Road, Oxford OX2 0DB.

■ COURSES offered by Cisi in the end of September, include Wordstar word processing, 29-30, September 9-10; CP/M user, July 26-27; August 23-24, September 27-28; Basic programming, September 20-24; Advanced Basic, September 13-15; and Introduction to computers, September 6. Further information can be had from the Cotinos Secretary, Computer Training and Education Centre Ltd, 2nd Floor, 101-109 Clerkenwell Road, London EC1M 5SA. Tel: 01-251 4010/4019.

■ MANAGING Sales Through Distributors is the title of a training programme available from the Tratec division of McGraw-Hill International Training Systems UK. It is aimed to help sales managers of large manufacturing companies to communicate effectively with their distributors. Details from: Jonathan Shand, Sales Manager – Tratec Division, McGraw-Hill International Training Systems UK Ltd, 99 Sheen Lane, London SW14 8AT. Tel: 01-876 4948.

reprints

If you are interested in a particular article/special feature or advertisement in this journal

Have a good look at our Reprint Service!

We offer an excellent, reasonably priced service working to your own specifications to produce a valuable and prestigious addition to your promotional material. (Minimum order 250 copies) Telephone Martin Bloomfield on 01-661 3036 or complete and return the form below.

To: **Michael Rogers**
Computer Weekly, Room 211A
Quadrant House, Sutton, Surrey, SM2 5AS

I am interested in . . . . copies of article/advert. headed . . . . featured in this journal on pages . . . . issue dated . . . .
Please send me full details of your reprint service by return of post.
Name . . . .
Company . . . .
Address . . . .
Tel. No. . . . .

Did you know...?

- no consensus has yet been reached on who in the organisation should be responsible for office automation
- distributed processing is increasingly transferring computer power from central control into the hands of users
- the 'management information control centre' and the 'corporate information utility' will become key components of commercial organisations
- proliferation of 'professional' personal microcomputers will call for installation and engineering self-support

Did you know...?

- the next five years will present numerous opportunities for strong, informed and able management to establish Computer Operations as an essential and irreplaceable element of management services.

Did you know...?

- Pergamon Infotech has designed a special conference for Operations Management to establish 'The Future for Computer Operations' to be held in London on 1-3 November, and by returning the coupon or 'phoning Maidenhead (0628) 39101 you can get full details.

I need to know more about the Future for Computer Operations
Name
Position
Organisation
Address
Telephone
Telex

Pergamon Infotech Limited
Berkshire House Queen Street
Maidenhead Berkshire
England SL6 1NF

Telephone: 0628 39101
International + 44 628 39101

PROGRAMMERS PAGE **by Philip Hunter**

The man with a dedicated approach to expert systems

HAWKINS . . . Nervous about machines coming to a conclusion.

ANYONE who is anyone in expert systems was at last week's Fifth Generation Conference in London. A notable exception was David Hawkins, who set up the UK's first dedicated expert systems division at Racal Decca.

Hawkins knows exactly what he wants to do and feels no need to indulge in the kind of abstract debate that ran riot at the Fifth Generation Cooference. His desire is to apply today's technology tomorrow rather than tomorrow's technology today.

Hawkins arrived home last autumn after 15 years abroad working in the oil industry with the French company Schlumberger. This experience will at first be directly invested in developing expert systems for oil exploration and well digging. Later Hawkins hopes to spread into other applications of machine intelligence such as medicine.

He sees two fundamental problems in building effective expert systems: obtaining the information from the expert, and building a workable model for computer analysis.

His answer to the problem is in the structure of the project teams, which in Racal's case will consist of three people. Two computer scientists will be recruited to build the models, and what he calls a domain specialist will be recruited from the oil industry to provide a direct link with expertise on the field.

The computer scientists will, Hawkins hopes, have some knowledge of expert systems. They will possibly be recruited from the universities where some of the pioneering work was done.

The end product will be highly customised systems. Hawkins has no intention of building expert systems generators of the kind sold by SPL and Isis Systems. These are rule-based systems with an inference engine to draw conclusions from a knowledge base.

In a rule-based system the user builds his own models in a dialogue with the system to establish rules on which the so-called expert's judgment is based.

"I'm not dismissive about rule-based expert systems," says Hawkins. However he thinks that they fail to dig deeply enough into the expert's store of knowledge.

Experts use implicit communication, he says. "The biggest problem is getting the expert to make specific statements of how he solves problems. In the real world, experts are much more sophisticated than the way in which they describe the problem."

Hawkins believes that expert systems built from generators merely parody the way problems are solved in the harsh real world. But he only has experience of the oil industry, which is bedevilled by multifactorial problems often described by uncertain data.

And a system built by Hawkins would run into four or five sterling figures, while Isis, for example, has cut the price of its Microexpert to £380.

Clearly Microexpert will appeal to many companies which do not trust expert systems sufficiently to lay out a large investment, and which want to splash around in the shallows before taking their feet off the bottom.

It also has to be said that the extravagant claims made for expert systems by one or two of the pioneers – whose blushes I shall spare here – have given them a bad name. There is no expert system alive that is any more than an analytical aid.

Hawkins admits this. "I'm very nervous about machines coming to a conclusion," he says.

Most experts think and talk among themselves in a language of jargon, acronym and abbrevistion. They want an expert system to speak their tongue, and this is another reason for Hawkins' faith in the tailored approach.

Each field of expertise speaks its own jargon language, and within each field there are innumerable dialects. This is a particular problem in the oilfield exploration business, which suffers from a shortage of experts and a plethora of information.

Data on rock thickness, density, permeability, speed of sound in rock and resistance to bombardment by neutrons has to be linked with existing knowledge of the geology and geography of the area to make hasty decisions, often arbitrary and sometimes wrong.

The knowledge explosion has forced people to overspecialise in order to keep abreast of the facts. The trouble is the more specialised you become, the harder you are to understand. Here, Hawkins believes, enters the expert system, which should under-specialise and co-ordinate all the divergent strands of information.

High-level thoughts on the ideal system

PROGRAM portability is a relative concept. It is impossible to escape completely the idiosyncrasies of individual machines and a system of any size will have some machine dependent compooents. These have to be rewritten when the system is transferred between incompatible hardware.

This is especially true of the most recent recruit to portability – Unix, the popular operating system oow available on several small computers.

In principle all operating systems work in the same way, and there is no reason why they cannot be written in a high level language for portability. But at some stage the operating system has to talk to peripheral drivers and memory management. Then the murky depths of machine code have to be faced.

The hulk of the Unix operating system is written in the language C, for which several machines now have a compiler. Unix is divided into three sections of varying machine independence.

Apart from a few memory management bits, the main section is completely machine independent.

There is a largely machine dependent portion, written in C, for driving the various peripheral devices. It is, however, machine independent in principle, with just the details varying.

At the lowest language level are the machine independent assembly language routines to handle allocation of processing time, and mapping of memory.

One of the most powerful portable operating systems is Muss, developed at Manchester University. Muss, like most portable operating systems, is written in a high level language for which a portable compiler is available.

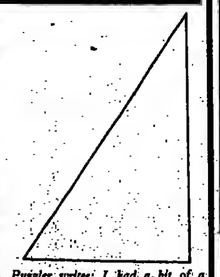
When Muss is carried over to a new machine, a process known as a half-bootstrap is employed. Assembly code for the target machine is developed on the host to facilitate an easy transfer.

Muss, Unix and other attempts at portable operating systems suffer from the need to have machine dependent portions to control the heart of the computer. Thought has been given to an ideal computer, which would have standard "hardware sockets" into which an operating system could be plugged.

All the machine dependent software would then be removed from the operating system, which could use standard commands to address the various peripherals.

PUZZLER

IN this dissection problem, you are asked to divide a right-triangle into seven smaller "acute" triangles (each one having all its angles less than 90°). See page 47 for solution.



Puzzler writes: I had a bit of brainstorm with the June 24 Puzzler. I'm pleased to say I managed to [illegible] Manhattan of 61 × 69 blocks.

Impossible!

DEAR PUZZLER,

Thank you for your interesting spot each week. But I must take you to task (CW, June 24) since the solution to the question as asked is, "It's impossible!" The area 61 × 69 is 4209 square units, a figure which tallies with 2^{12} + 3^6, but not of course with 4,485. It's nice to know that you are human.

HUGH SPARROW
Leytonstone, London E11.

Barely bearable bears

ALWAYS on the lookout for novel applications of programming expertise, I can tell you of a system used for monitoring movement of marauding bears in Canada's Banff National Park. The idea is to predict where bears are likely to be found from a knowledge of their colour, behaviour and previous movements.

This may sound a little vague, but the park's authorities have been driven to desperation since 1980, when one man died in the park, and another sued the park for $500,000 after having his jaw torn off by a bear.

The computer system will be used to develop better bear management techniques. One possibility being mooted is to place strategic carrots about the countryside to control bear movements. More realistically, bears could be herded up and dropped in areas in which they are more likely to settle for some time.

I wonder how Winnie-the-Pooh would react to having his movements monitored by computer.

Enigma of the Ada compiler

THE exact stage of development of the Ada language is hard to define.

On the one hand we have members of the UK Ada consortium, and indeed of other consortia, saying that a full implementation of the Ada compiler is still several years off. On the other hand we have a flood of working Ada compilers pouring from the US.

Let me shed some light on this mystery.

An acquaintance of mine recently visited the US and met a home computer enthusiast who had no fewer than six working Ada compilers, bought for between £25 and £50 each.

Or so-called Ada compilers. One of them turned out to be no more than Pascal with Ada keywords, another was RTL/0, a loose research language. The others were similarly cons of one sort or another.

"Real Ada compilers," my acquaintance tells me, "are very difficult to write."

Masquerading as lamb hunts many a wily fox.

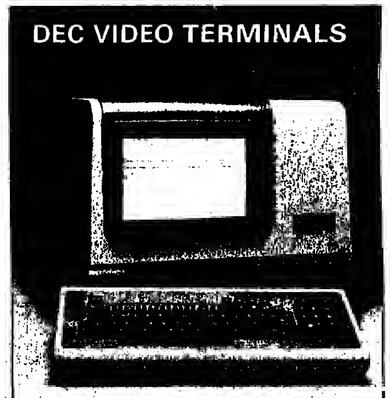
ABC 50th Anniversary

A fair deal for our advertisers

No guesses, no wishful thinking – our Circulation figures are independently audited to the strict standards required by the Audit Bureau of Circulations.

We're proud of our membership of ABC – especially in this its Golden Jubilee Year.

DEC VIDEO TERMINALS



VT100 GREEN SCREEN £965
VT100 STANDARD £980
VT101 LOW COST £680
VT125 GRAPHICS £1895
VT131 BLOCK MODE £995

MIDLECTRON
SALES HOT LINE
077-382-6811

MIDLECTRON DISTRIBUTION DIVISION,
MIDLECTRON HOUSE, NOTTINGHAM ROAD,
BELPER, DERBY, DE5 1JQ.

THE LOWEST PRICE DAISYWHEEL PRINTER

Smith Corona TP-1
£485
R.R.P.

Sole UK Distributor:
DISCOM TRADING COMPANY
51 High Street, Evesham, Worcestershire.
Telephone (0386) 3981

PEOPLE

SPL gets second managing director

RESPONSIBILITIES of the group managing director of SPL are to be shared between Peter Adams, who currently holds the title and David Thomson, who will join the board of Systems Programming Holdings (SPH) as joint managing director of SPH and SPL in September.

Thomson is currently director of electronic and information technology operations at the British Technology Group and was finance director of NRDC and chairman of its CAD/CAM aubsidiaries until the merger with the NEB to form the British Technology Group.

He joined NRDC five years ago and has had a working relationship with SPH throughout the past year, attending its board as BTG representative.

Thomson will take responsibility for finance and commercial activities in the UK and for overseas acquisitions.

Adams, as the other managing director of SPH and SPL and chairman of SPL, will concentrate on marketing and the group's overseas operations.

■ Terry Dunn has been appointed Northern regional manager for MSI's Warrington office. He was previously with Harland Data Systems as UK sales executive.

■ Professor Brian Rnndell, professor of computing science at the Science and Engineering Research Council, has been awarded a grant of about £9,000 to join the University of Newcastle-upon-Tyne's computing laboratory as a Visiting Fellow.

■ John Kinnear and Tony Brewer have been appointed to the board of management consultancy Butler & Cox. Kinnear is a founder-member of the company, which was established in 1977. Brewer joined the company later in 1977, and in 1980 was made a partner.

■ Elvin Rose has been appointed director of manufacturing at Able Computer in Irvine, California. He formerly held senior management positions with IBM.

■ Peter Dodds has been named sales director at Tandata. He was previously marketing services manager at Redifon Computers.

■ Brian Smith has been appointed systems director at Sharp Bennetr Associates. He was previously distribution consultant with the company, developing bespoke systems for clients.

■ Francis Lorentz has been appointed general manager at CII-Honeywell Bull. He has been deputy general manager at Societé Lyonnaise des Eaux since 1980. Between July last year and February this year, he acted as government delegate to the Thomson Group.

■ Graham Lockie has joined System Industries as sales executive for the Greater London, Kent and Sussex areas. He was formerly a regional sales manager with Vermont.

■ Geoff Leary has been appointed reseller business manager at Prime Computer. He will be responsible for business in the North and Midlands, based at the company's Milton Keynes office. He has been with the company for two years as sales executive in the Birmingham branch.

■ Colin Hendry and Paul Ransom, both formerly with Northern Star, have joined Swiss Reinsurance as database administrator and senior systems programmer respectively.

■ Mike Dixon, previously sales director for United Computing, has been appointed sales and marketing manager at Data Logic. Darryl Bowles, previously European sales and marketing manager for Computer Resources, has become area manager. Tony Baker, formerly Reatarr product manager for Computer Resources has been named product sales manager. Tony Russell, previously with Hoskyns, becomes data centre manager and Xenia Gillian has been appointed sales administrator. All these appointments were made to Data Logic's information systems division. Joining the software products group of Data Logic are Larry Cucchi, as sales manager, from Informatics UK, and Harry Richardson also from Informatics, who becomes support manager.

■ Mary York has left Computer Plan, where she was an analyst/-programmer to become account executive for the finance district of ADP Nerwork Services.

■ Cyril Carswell has been appointed to the newly-created position of sales and marketing manager at GCS Engineering. He was formerly a regional sales manager for GCS hardware, responsible for major customer accounts. He joined the company in 1978.

■ David Williams, previously financial accountant with Philip Morris, has joined X-Data as manager of finance and administration and company secretary. He is a member of the Institute of Chartered Accountants.

■ Charles Brett has joined BIS Applied Systems as a consultant in the office automation division.

■ Derek Butterworth, formerly a project manager at NCR's European support centre, has joined software house Harrison Computer Services as a senior consultant.

■ Tony Green has been appointed branch manager for the Northern region at Rediffusion. He joined the company in 1977 as a territory manager and later became area sales manager for the Northwest of England. Dick Morley has joined the company as a sales consultant for the government sector.

Aim sets up new division

AUTOMATIC Information Management (Aim) has established a general business systems division to handle sales of all the computer systems not specifically oriented to its two vertical marketing divisions: legal systems and medical systems. It will sell systems based on DEC equipment, hand-held terminals and all non-legal and non-medical microcomputer systems.

Left to right in our picture are Paul Tutton, who has been appointed general manager of the new division from his previous post as manager of the microcomputer division; John Davis, formerly in charge of the retail and finance division and now director of the new division; and Steve Wilkinson who becomes sales manager. He joins Aim from ICL.

■ Dallas Talley has been appointed president and chief executive officer at MDS Quantel, and has been elected senior vice-president of Mohawk Data Sciences. In 1973 as a consultant he established Quantel's international distributor network. He joined the company as senior vice-president in 1980 and became executive vice-president and chief officer two years later.

■ Barry Fuller has joined MSA as a systems consultant. He was previously a systems manager for Coventry Climax.

■ Carl Neun, formerly vice-president of finance at Shugart, has been appointed vice-president for manufacturing-related processes of all eight and 5.25 inch floppy disc drives. Thomas Gardner becomes vice-president and general manager of rigid disc division. He previously held a similar post with Memorex. Gerald Klit, previously with BASF, is the new product manager for Winchester disc drives.

■ Len Corthwaite, managing director of ASEA Ltd since 1981, has been appointed to a new position in the ASEA Group, with responsibility for creating business opportunities in the oil and gas industry. He remains on the company board. Eric Drewery, who has been managing director of the rotating machinery division of Mather and Platt since 1979, becomes managing director of ASEA Ltd and chairman of ASEA Service.

■ Stephen Fishman has been appointed manager, word processing resources, at the Alfred Marks Group. He joined the group a group technical consultant a year ago.

■ Paul Stirling has joined Arbat as project manager responsible for the implementation of the Swift package in the UK and Europe. He was formerly with Filetab Support Services.

■ David Wilkinson has joined Birbage as sales director. He was formerly with the VLI Group where he set up the company's sales and marketing arm.

DIARY

JULY 20

Information systems in health care. BCS Medical Group, Primary Care Group and Sussex Microcomputer Society. Details Dr Geoff Dove, 01-385 7776.

JULY 23

APL in education. UK APL User Group. Read Lecture Theatre, Imperial College of Science and Technology, South Kensington, London. 2.00. Details P. Goacher (03727) 21282.

JULY 26-28

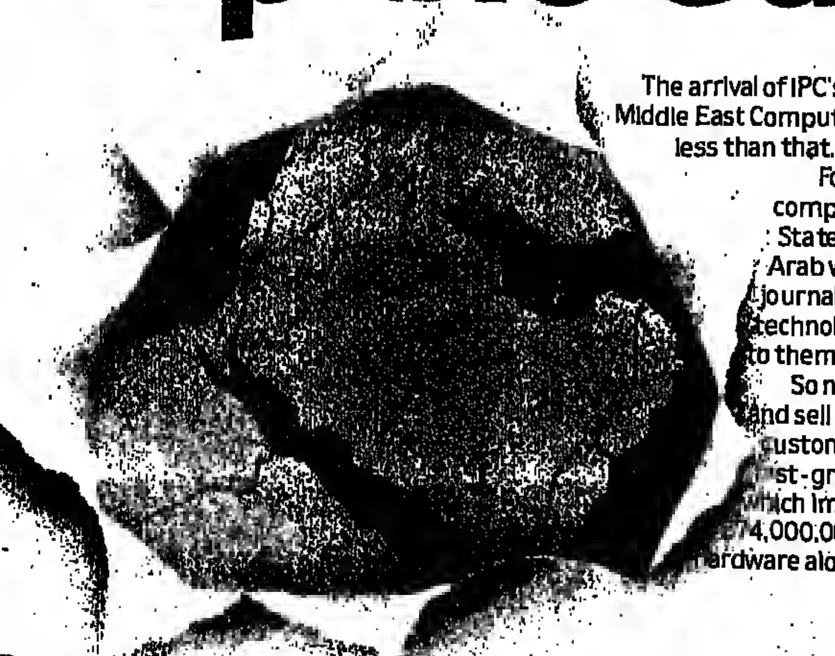
Electronic image processing — international conference. IEE. University of York. Details IEE, 01-240 1871.

CONFERENCE

■ A CONFERENCE on CAD-CAM is being held next June in Cambridge. Organised by the Computer in Manufacture Committee of the Institution Manufacturing Industries Division, it is co-sponsored by the Institution of Production Engineers. [illegible] ference is being held in [illegible] with the Cambr[illegible] and CAM-I. T[illegible] appraisal and [illegible] CAD/CAM [illegible] CAM into [illegible] ment in CAD/C[illegible] developments in graphic [illegible] lated hardware and [illegible] in software ability. Details [illegible] the Institution of Mechanical Engineers, 1 Birdcage Walk, London SW1 9JJ.

Big news for everyone selling computer products and services to the Middle East

We've opened up the Gulf!



The arrival of IPC's unique new publication, Middle East Computing, means nothing less than that.

For the very first time, computer users in the rich Gulf States — and throughout the Arab world — have a regular journal reporting on the technology and services available to them, world-wide.

So now you can talk direct — and sell direct — to potential customers throughout this vast, fast-growing market. (A market which imported more than £74,000,000 worth of computer hardware alone in 1980).

How we've done it

Middle East Computing began as a single-issue publication, backing the Gulf Computer Exhibition and Conference at Dubai last December. Its enormous success revealed such an urgent and widespread demand for computer product information that it will be published regularly from April.

6000 copies will be sent to established computer users or key personnel within government and major business organisations, in the Middle East countries predominant in the computer market. The circulation was compiled through the full research resources of Computer Weekly and IPC Business Press backed by contacts made at the Gulf Computer Exhibition.

Middle East COMPUTING

IPC Electrical-Electronic Press Ltd.

A Computer Weekly publication

Advertisement Manager: Harry Hutson, Middle East Computing, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS Tel. 01-661 3500 Ext 8539

PRODUCTS

Modem puts systems online to Prestel

DESIGNED for use mainly with videotex and viewdata systems, public or private, is a new competitively-priced auto-dial modem from Zycor.

Teledek C1 enables word processors, micro, mini and mainframe computers to go online to systems like Prestel. In this way access can be obtained to databases, external and internal, or messages exchanged by machines of different standards, eg via Prestel's Mail Box Service.

From the computer keyboard the user can instruct the C1 to dial automatically a remote viewdata computer. Once contact is established, data is displayed on his screen and, again from the keyboard, he can interrogate the database.

In tele-shopping and similar applications, a microcomputer connected to Prestel via Teledek C1 could automatically work through the response frames, process the data, print packing and address slips, raise invoices, and even update stock and accounting records, says Zycor.

Teledek C1 makes it possible for computers using different communications standards to talk to each other since it incorporates a protocol converter, in addition to autodialler and modem functions.

It connects to the office computer system, micro or word processor via a standard input/output port.

"The Teledek is expressly designed for continuous business use yet, at about £400, it is less than the first two years' rental of a British Telecom modem, which does not even have auto-dial or protocol-changing features," claims Ken Williams, Zycor managing director.

Zycor (CW), Gateway House, High Street, Slough, SL1 1NB.

14in disc drive from Fujitsu

A 14-INCH Winchester-type disc drive with 168.5 Mbyte unformatted storage capacity and 27 milliseconds average positioning time is available from Fujitsu.

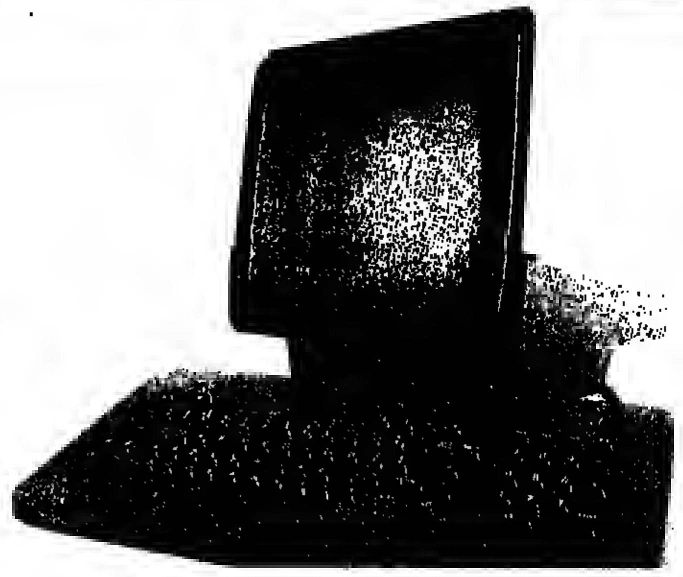
The M2284N offers large storage capacity — 832 cylinders with a 20,480-byte unformatted track capacity. The track density is 680 tracks per inch.

The use of a high-speed rotary actuator results in fast head positioning: 6 milliseconds for track-to-track, 27 milliseconds average and 55 milliseconds maximum, and a high data transfer rate of 1.012 Mbytes per second.

The M2284N is a member of Fujitsu's 14-inch Winchester-type fixed disc drive series, called M228X. Some models have fixed heads for faster access.

They are available with power supplies of either 100/115VAC or 200/240VAC.

Fujitsu Europe (CW), 54 Jermyn Street, London SW1. Tel: 01-493 1138.



The TT100 from Trident.

Trident launches a look-alike

FOLLOWING the introduction in March of Graphmate, a free-standing graph plotter, Trident now announces the launch of a DEC VT100 look-alike terminal.

The terminal, the TT100, offers all the features of the DEC VT100 plus substantial additional options included as standard.

The TT100 will sell for substantially less than the DEC equivalent machine including all additional features, says Trident.

Over 150 TT100s are already installed with major DEC users.

The TT100 will be marketed through Trident Technology, a wholly owned subsidiary of Trident Computer Services.

Trident Computer Services (CW), The Parade, High Street, Frimley, Surrey. Tel: 0276 64252.

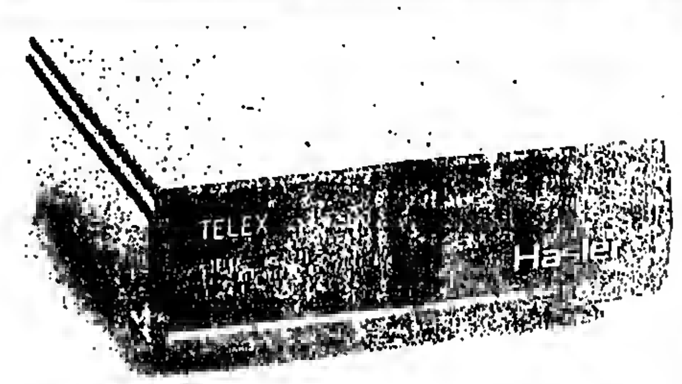
TA speeds up the Alphatronic range

TRIUMPH ADLER is adding speed and storage power to its range of Alphatronic microcomputers with the introduction of the Alphatronic P2U. This machine is an upgrade of the P2/64K microcomputer, but includes integral twin double-sided, double-density floppy disc drives to provide a total disc storage capacity of 720 Kbytes. Priced at £2,295 including VDU, the P2U is one of the lowest priced microcomputers in its category.

Adding further scope, Triumph Adler has introduced an IEC bus (IEEE interface) which enables Alphatronic users to link their microcomputer to a wide range of IEEE-based peripherals and instrumentation. The price of the interface now available is £150.

A real time clock option further enhances the use of Alphatronic microcomputers for applications requiring time logging and is available at £70.

Triumph Adler UK (CW), 27 Goswell Road, London EC1M 7AJ. Tel: 01-250 1717.



The Telex Interface Unit.

'Unit will cut telex bills'

A GENERAL purpose Telex Interface Unit from BCC will allow mini- and microcomputers and word processor users to communicate with telex subscribers anywhere in the world. It is designed, developed and manufactured in the UK by Hasler.

The Telex Interface Unit provides automatic dialling and redialling and incoming message distributor facilities. This enables the user to prepare, enter and receive telex messages on his own terminal, thus eliminating the costly delays and frustration often caused by paper tape punching and handling, manual dialling and redialling and manual distribution of incoming messages.

Nigel Coster, marketing director of Business Computer Centre, says: "The Hasler Telex Interface Unit will prove to be a real cost-cutter

Business Computer Centre (CW), 26 Eastcastle Street, London W1. Telephone: 01-580 4273.

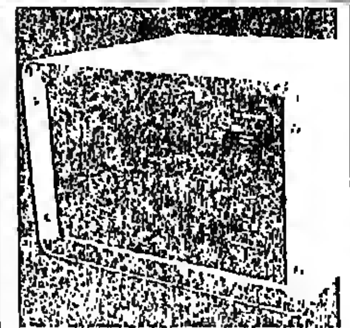
Tri-density magnetic tape unit

A HIGH-SPEED, tri-density magnetic tape drive has been added to the Harris product line. The new Model 6730 features a speed of 125 inches per second and densities of 800, 1,600 and 6,250 bits per inch.

Compatible with the entire current family of Harris' high performance VOS super-minicomputers, the 6730 is cabinet-mounted and includes a formatter/controller unit. This controls both functional and diagnostic modes through a built-in microsequencer. Since the unit is built directly into its own cabinet, there is more space inside than in standard rack-mounted units, providing easy access for maintenance functions.

Price of the Model 6730 is £34,840.

Harris Systems (CW), Information Systems International Division, PO Box 27, 153 Farnham Road, Slough, Berks. Tel: (0753) 34666.



The Datastore from ATS.

Intelligent telex store

AN intelligent data buffer capable of connection to the telex network has been launched by ATS (Communications). Called Datastore, the equipment has a 324K store which can be divided into six 54K individual units to be used separately or together.

This means that it can be used for several different functions at once.

ATS (Communications (CW), Bridge Road, Haywards Heath, Sussex RH16 1UB. Telephone: (0444) 41911.

Autonomy for offices

A RANGE of modular bank terminals designed to provide new levels of autonomy for branch offices has been announced by NCR.

Called the NCR5000 series Branch Automation Systems, they use 16-bit Motorola 68000-based controllers capable of supporting a variety of activities at once, including word processing, data entry and programming in Cobol, Pascal or C.

Up to 32 visual display units or printers can be connected to the largest of the three controllers in the range, the £5,500 5094, via a 48 Kbit-per-second lightweight telephone cable up to 12,000 feet long.

Sales manager Andrew Chard said a typical two-cashier bank or building society branch would be equipped for £8,000 and a four-cashier branch for £12,000. The controllers would also support NCR cash dispensers.

The systems will be made in the US, but will be available both in the UD and the UK in the autumn. One of the first pilot test sites will be the Chelsea Building Society early next year.

NCR Ltd (CW), 206 Marylebone Road, London NW1 6LY. Tel: 01-388 8244.

NOW DIABLO FROM RAPID TERMINALS

The Daisy Route.

The speedy way to a quality printer~

So phone Rapid Terminals today, and take the daisy route to fully tested products, ex-stock deliveries, and total support.

Southern Tel: (0494) 26271

Northern Tel: (0270) 627505

Rapid Terminals

Diablo

Cost-Effective Communications

NETWORK CONTROL
LINE MONITORING
V24 VF PATCHING & SWITCHING

LINE DRIVERS
SYNCHRONOUS ASYNCHRONOUS WORKING
CLEARED FOR BT LINES
SPEEDS UP TO 19.2K

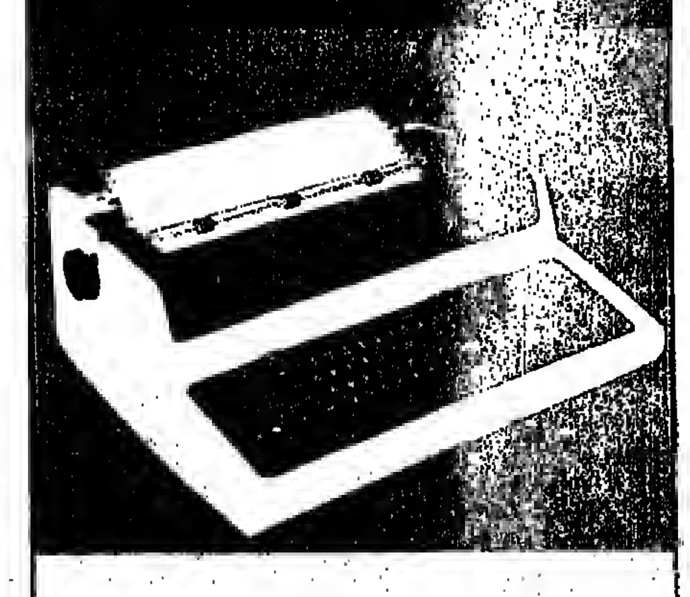
PROTOCOL ANALYSERS
HANDHELD INTERFACE TESTERS
X25 PSS COMPATIBLE STATMUXES

For further information:
NOLTON COMMUNICATIONS LTD.
Fieldings Road, Cheshunt
Herts. EN8 9TL
Tel. 0992 33555, Telex: 28952

Nolton

Commitment in communications

DEC PRINTERS



LA34 KEYBOARD PRINTER £625
LA34 PRINTER ONLY £585
LA120 KEYBOARD PRINTER £1295
LA120 PRINTER ONLY £1250

MIDLECTRON

SALES HOT LINE

077-382 6811

MIDLECTRON DISTRIBUTION DIVISION, MIDLECTRON HOUSE, NOTTINGHAM ROAD, BELPER, DERBY, DE5 1JQ.

BCS study on computer evidence cited in court

Computer Generoted Output as Admissible Evidence in Civil and Criminal Casea. Edit. T. R. H. Sizer and A. Kelman. Heyden & Son. £7.00.

HIGH Street cash dispensing machines are now an accepted part of life, and most people feel that they are as reliable and secure as any other part of the banking industry. However, as the law now stands there is no guarantee that a prosecution for fraudulently obtaining money from a dispenser would succeed, because the evidence of the crime would come direct from a computer and this could be inadmissible in law.

Worrying facts such as this and the result of the Pettigrew case, in which proof of a burglary resting on a computer listing of bank note serial numbers was ruled inadmissible evidence, led the British Computer Society to commission a report. This book has been taken and adapted for non-legal readers from this report.

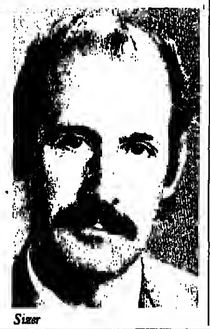
Richard Sizer, a chartered engineer, and Alister Kelman, a barrister and Fellow of the BCS, led a small group of the Professional Advisory Committee in a study of the legal and computing problems and submitted a report to the Home Office a year ago.

Needless to say, the government has been slow to respond, and in the interim period, the BCS report is being cited or is forming part of the pleadings in at least two current court cases.

The authors describe and analyse, with a minimum of legal or computer jargon, the law as it now stands and the main problems to be overcome in changing the law to accept computer output. As an example of how it could be dealt with, methods adopted in the US and Australia, both fellow Common Law countries are described, highlighting statutes which might be of assistance in the UK.

This book should be compulsory reading for all systems designers, as well as barristers and solicitors, because the conclusion drawn by the authors is that development standards between systems will become vital in proving the accuracy of computer output, in order to get it accepted as evidence.

Maggie McLening



Sizer

Teaching the latest Fortran

Fortran 77. Donald M. Monro. Edward Arnold. £9.50.

FORTRAN 77 is a manual for teachers to use both with programmers experienced in other languages and students approaching programming for the first time.

Emphasis is on structured programming, now more feasible since the development of this latest version of the language. Efficiency and style is taught through practice.

Chapters 2 to 13 form the main body of the course in basic Fortran 77, with the early chapters including enough information to enable the student to start writing simple programs straight away. Chapters 16 to 19 deal with advanced aspects of the language.

Exercises to help the student consolidate his or her knowledge occur every few pages and there are problems to help both student and teacher assess progress.

Rosemary Shepheard

Art of management – Japanese style

The Art of Japanese Management. Richard Tanner Pascale and Anthony G. Athos. Allen Lane. £7.50.

ANY book which opens with the comment "This is an important book" immediately puts the reader on the defensive. Readers will continue to be on the defensive as they grapple with a volume which features a wealth of conceptual schemes, emphasises interrelationships and discusses variables. This approach, however, is hardly surprising given the authors' backgrounds at Harvard and Stanford business schools.

Before attempting the book, a management consultancy course in The Seven S Framework is advised. This embraces strategy, structure, systems, style, staff, sequencing and superordinate goals. Unfortunately, the book can only rate as a near miss, with the authors scoring several own goals, the most notable being a fondness for dated references, some of which go back to 1938.

In tackling the subject of Japanese management, the authors have an uphill task. We all understand that the Japanese worker is placid, hard-working and part of a well-established and maintained feudal system.

But the book makes clear that the management techniques that have made Japanese companies so highly productive are not necessarily culturally based.

Backed by Wells Fargo and the Coca-Cola companies, the book contrasts the management approach of American companies like IBM and ITT with Japanese conglomerates such as Matsushita and Honda.

With the Japanese taking an ever larger interest in the European computer market place, the book makes a useful contribution to understanding the differences between American and Japanese management. Providing the reader can master the management consultancy approach and style, and the Seveo S Framework, the book provides a useful insight into management styles.

Alan Simpson

Bringing it all back home...

...to Manchester, birthplace of computing in Britain. To Belle Vue from November 25th to 27th – the obvious place for the Northern Computer Fair.

Following the incredible success of our London show 'the biggest ever personal computer exhibition' where over 38,000 people visited us in 3 days, we're going to repeat the performance in Manchester.

Whatever your specialised line of business – personal computers, home computing, small business systems, associated software – this is the exhibition designed for you.

It's the ideal showcase for companies who need to demonstrate to a fast expanding and increasingly well informed audience all aspects of personal computing.

...you cannot afford to ignore it.

For further details about exhibiting at the Northern Computer Fair, contact the Advertisement Manager, Practical Computing, Room L310, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telephone: 01-661 3500 Ext 3021

Name

Position in Company

Company

Address

Telephone

Essential reading for postgraduate students

Functional Programming and its Applications: An advanced course. Edit. J. Darlington, P. Henderson and D. A. Turner. Cambridge University Press. £12.50.

THE content of this book is compiled from material presented at a Crest course held at Newcastle University in July last year. Ten of the lectures on the course each provide one contribution for the text, but these blend together effectively to give a comprehensive treatment over the chapters.

Functional languages are advanced as a superior alternative to conventional programming languages for the production and maintenance of reliable code and it is suggested that they are now a realistic practical proposition with recent hardware developments.

A number of functional languages and their application are discussed, including the traditional Lisp, and implementations of functional languages are considered. Several contributors deal with the development and style of functional programs.

Functional operating systems, computer architecture requirements and capabilities also receive coverage. The mathematical underpinning for functional languages and aspects of its development are clearly expounded.

The book is clearly written at best in a variety of styles. However there are unnecessary variations in typography, presumably deriving from each contributor's "camera ready" copy. Familiarity with set theory, logic and modern algebra is essential for the formal aspects but the other sections are accessible without such an emphatic requirement.

Some of the material in the book will be of value in a final year specialist computer science course. It will be essential reading for the postgraduate student and researcher in the functional programming field. It should also find a place on the bookshelf of anyone professing an interest in the development of programming and programming languages.

Tony Powell
Wolverhampton Polytechnic

More than just a guide to computer design

Advanced Computer Design. J. K. Iliffe. Prentice Hall International. £18.95.

THE title Advanced Computer Design suggests a book on the DAP, Cray-1 etc. These are dealt with in the text, but it starts sensibly with more familiar architectures, the PDP-11 and ICL 1900. These are covered in the first part of the book which shows how interpreters for these architectures could be constructed.

Several chapters are concerned with the proposition that modern computer design can improve on traditional ways of implementing high-level languages. In this context, micro-programmable machines, bit-slice processors (the AM2901), direct execution of languages and case studies of Fortran, Cobol and VCS are discussed.

Throughout the book no direct reference is made to microprocessor design and while it may be better to draw a veil over the design of the 8-bit micros, the iAPX 432 is a significant omission in a discussion of architectures designed for the speedy execution of high-level languages.

The second part of the text introduces the concept of high speed data handling by vector processors such as the FPS AP-120B and Cray-1. Array Processors are discussed, Illiac IV rather too briefly. Towards the middle of the book is the active memory array system as typified by the ICL DAP and appropriate programming techniques for such machines. Their place in the design of general-purpose systems is examined. This is the most readable, clear and enjoyable part of the book and is recommended to anyone who wants an introduction to the principles of array and vector processors.

The last part is concerned with structuring techniques and abstraction. It deals with mechanisms for supporting program modularity, controlled resource sharing, parallelism, protection and error handling. Because this area seems more in advance of current practice-of-the-art in machine design it reads less well and seems less clear.

This book will have considerable value to anyone interested in computer design. Highly recommended.

John Cockburn

SOFTWARE MONTH

PAYROLL

Personnel due for a facelift

PAYROLL, that most taken-for-granted of software applications, is due for a facelift. Changes in the administration of sick pay mean that payroll systems all over the country will have to be revised, updated, and brought into line with the new requirements by April 1983.

In this issue of Software Month Cliff Dilloway, a consultant specialising in payroll and personnel applications, looks at what the changes in law will mean, and how users can best cope with them.

Payroll lends itself to packaging. The mechanics of paying out a cheque at the end of the month seem a simple enough process, and software vendors have been quick to pounce on packaging the software. For many people, the computerised payslip was the first contact they had had with computerisation of any sort.

But like all packaging, the payroll package carries a penalty for its convenience. Because it affects people directly it has to be accurate and reliable, and because it is run every month it has to be efficient. The number of authorities (besides the employee and the employer) interested in what goes on to that payslip means that there are always rules by which the package must abide.

When the rules change – as they will when the new regulations are introduced next April – that means an enormous overhead in updating the existing payroll package. This effort, often euphemistically called "maintenance" can make an old system more trouble than it is worth.

One of the most persuasive reasons for investing in some new software is the so-called information revolution. Gradually companies are beginning to realise that, next to their staff, their most valuable untapped resource is information.

The payroll system is a good case in point. Many people consider a payroll (or even a fully-fledged personnel) system as totally separate from anything else the company might do.

In fact, the personnel information has many links with other mechanisms used by a company. For example, a system which records sales activities per salesman can link with the payroll. Come the end of the month, it is possible to gather from existing information the extra data needed by the payroll to add commission to the payslip.

Once an integrated system is up and running, it is likely to expand to encompass other areas of company activity. This involves the automation of tasks such as the addition of commission to the payroll. It also makes possible new jobs which cannot be done when each application is a satellite to its own separate nucleus of data. The benefit is a more efficient, productive company.

Dilloway looks at the new problems introduced by the changes in statutory sick pay, and what impact they will have on payroll systems that are already computerised.

Since ready-made packages appear to be the answer to the problem, both mainframe and micro solutions are assessed. Dilloway also gives a practical, down-to-earth guide to the steps wary package buyers should go through before they commit themselves to buying one particular package.

There is also a guide to system conversion, since converting one system to another can be a worse job than starting from scratch, and a few hints on how to avoid total disaster when the big day – April 6 1983 – comes round.

● *Software Month is edited by Claire Gooding.*

Be prepared for maintenance costs.....22
Getting to know a package.....23
Round Up.....23
Softsell on selling your program.....24

Cliff Dilloway opens this four-page feature with a look at the problems presented by an imminent change in the law

Statutory sick pay will mean quick and difficult decisions

EVERY dog has its day, and 1982/3 promises to be the year of the payroll. Payrolls have not had a look in since 1974/5, and then, as now, the reason is a statutory change. In 1975 it was the introduction of unified income tax; in 1983 it is the introduction of statutory sick pay.

The 1983 change promises to be a bigger job. The programming will be much the same as in 1974, the file changes are extensive, but statutory sick pay also impinges on personnel systems.

Whereas sick absence is a personal matter, sick pay is a payroll matter. Both need to record a history of sickness absence for their own reasons. Difficult systems decisions have to be taken with a chance there could be problems later if the wrong choice is made.

The principle of statutory sick pay is simple enough. Dependent on average earnings over the last eight weeks, payment is made at a scale rate. The first three days sick carry no entitlement. A further sick absence within 14 days is paid from the first day. A maximum of eight weeks statutory sick pay is paid in a year, after which the individual becomes entitled to National Insurance payments.

The details of statutory sick pay are all given in an employer's guide that is not available at time of going to Press, but should be released within a few days. The details will doubtless be fearsome and require extensive study. Employers will be able to recover their statutory sick payments from the government out of their National Insurance contribution remittances, so there should be no direct cost.

The difference is that it will focus attention on the cost of absence and that is where the personnel system comes in.

If the systems dealing with statutory sick pay ignore the personnel systems aspects, it is at the risk of needing considerable changes later. There are difficult decisions to take, and quickly, because statutory sick pay comes into effect on April 6 1983.

Historically, payroll was the first computer application. The first payroll of over 10,000 weekly employees was operational as long ago as 1955. Payroll packages started to emerge about 1970, and after 12 years of commercial development they have become quite sophisticated.

Personnel systems are not so well developed. There was no big impetus a few years ago in the US when legislation imposed mandatory reports, but without that absolute requirement there has been little movement in the UK. Things are now changing.

The recession and the pressure of increasing salaries have meant that labour-intensive industries have to consider how they use their human resources more carefully.

The larger the computer used for payroll the more likely it is that well established in-house written programs are being used. The case for altering those programs is strong, even if the task is daunting. The payroll section is familiar with its operation and there may well be some built-in facility that represents an unusual way of working that would be difficult to emulate in a package.

A payroll package is the second choice. Since 1974 all mainframe payroll packages have been so much developed as to constitute a rewrite. The long history of payroll development has resulted in a degree of sophistication that has not yet been reached in other applications.

A way out is to put the payroll on a bureau and let the payroll section input its own data through a terminal. The bureau can take on the workload of training the payroll section.

Not all the bureaux have systems to handle both payroll and personnel records. Sometimes it is one that is the leading product while the other is the poor relation. What is needed is a system that is sufficiently integrated that the problem of having separate files is avoided.

A similar result but different solution can be obtained by providing the payroll section with its own standalone mini. If payroll will accept the responsibility of running a machine of its own then it can seek its own salvation.

An advantage of payroll section having its own computer is confidentiality of the data. Once the door is locked on its office then payroll details are as secret as they ever were with the manual records of long ago.

Which of these solutions is preferred becomes a matter of cost, the time it would take to do the job, and personal choice.

Since most people, particularly payroll people, usually rise to their responsibilities it is worth giving them everything they can take. This would mean a dedicated computer in the payroll office.

There is a final point for the far-seeing who have time to consider it: the pension system. A pension file nominally only needs an annual update. Data may be needed more frequently in respect of retirements, deaths in service, termination or redundancy exercises, but these are usually viewed as one-off ad hoc calculations whenever they occur.

SOFTWARE MONTH

MILLS . . . Believes in payroll commitment to customers.

Payroll package buyers must be prepared for maintenance costs

THE mainframe payroll packages are well established and there are a few dominant suppliers. Below the mainframe level there are many payroll products on offer – most, but not all, tied in to just a few makes of computer or operating system. Doubtless the micro-mini marketplace will gel like the mainframe market and the introduction of statutory sick pay will be a catalyst to the suppliers.

The leading mainframe payroll package suppliers and a sample of suppliers for smaller computers are listed on page 23.

The market leader in mainframe packages is Peterborough Software with its Unipay package. Peterborough Software is British software house specialising in related applications packages. Managing director John Mills believes in a payroll commitment to its customers and says: "We supply a continuing service on a rental basis. We have to be in the habit of selling ourselves to all our customers all the time.

1983 APRIL

SUN	MON	TUE		THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

Perhaps that is why we are Number One."

Pushing Unipay hard in the marketplace is MSA with its Q-pac payroll system. Q-pac, which is of South African origin, has been in the bands of three different suppliers in the last 10 years and this has not done its market image any good.

Don Schmitt of MSA says: "Q-pac has a leading position in the marketplace because of the overall flexibility of the package linked with the obvious advantages of a company supplying a full range of integrated financial systems who, in turn, are the owners of the software they market and not merely agents."

The third package in line is the PPL-Cyborg system. The product is based on a US package that has been modified by PPL using the experience it gained while responsible for marketing Q-pac. Its success supports the belief that the important ingredient in package development is product and market knowledge rather than some intrinsic power in the products programs.

Tim Southern, PPL's managing director, says: "Our late start has enabled us to provide a modern system using today's techniques which provide the facilities the market needs in the Eighties and consequently we are taking customers off our competitors."

Last, but by no means least, is K-Paye offered by KCS. K-Paye is different in kind from the other packages described below. Managing director Geoff Knight, whose name provides the K in K-paye says: "There is a tremendous demand for online file maintenance and batch running of payroll. Our product meets this demand on a range of many minis up to the largest 360s."

Unipay, Q-pac and PPL-Cyborg are parameter-driven systems. Users each have the same programs and specify their requirements by means of parameter or control statements. The three competing systems are continually leapfrogging each other with enhancements so that the capabilities of the systems are tending towards being roughly equivalent.

It is hard to find a well-established facility in any of the three systems that cannot be closely matched by the others. There is a strong inclination on the part of each supplier to provide an enhancement to plug any gaps that are revealed when a sale is lost.

K-paye has only a small amount of parameter control. For requirements outside the coverage of the parameters KCS will provide a source code module. KCS is organised to supply and support these modules to run on a wide range of computers and also to provide an ongoing support and maintenance service. The price of the KCS package is likely to be lower than the other packages mentioned and the possibility always exists of users being able to be involved in the source code maintenance.

Below the mainframe level there is a wide choice of software available and prices are just as varied. If a computer is being acquired for the purpose of payroll, then it is advisable to choose the software first. Ian Duffy of Wisbech Computer Services, a payroll specialist company, says: "We are providing mainframe equivalent facilities on a CP/M micro as a standalone computer for the payroll department. It is very attractive for them to have their own machine under their own control."

For those that already have a computer, trade sources will lead them to the packages they can use. One word of warning: Statutory sick pay could require as much file space per employee as is required for all other payroll purposes. On small computers this will reduce the number of employees that can be handled.

There are so many payroll packages for small business computers that finding which one is best for you is well nigh impossible. Price is no guide at all. The good package going for volume can be cheaper than the piece of rubbish with owners having exaggerated ideas. The market has not been active long enough for a price profile to emerge.

To make your selection modify the strategy given on page 23 and expect to have to get two or even three packages paid for and working before you settle on what suits you. Keying in the names and P45 data for even 300 employees is not too big a task and actually using a package is probably cheaper than spending a lot of time trying to make the right choice by abstract thought.

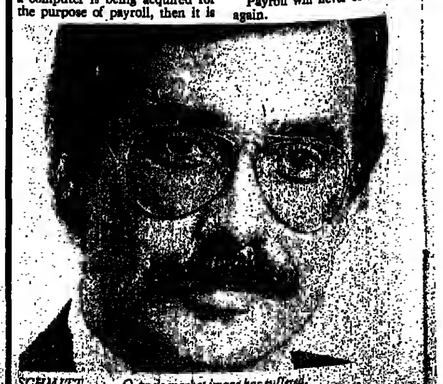
Find out whether the maintenance offered will be adequate. The surest test is a commercial one. The regular maintenance income from a reasonably-sized user base is a commercial asset. Whatever disasters befall the package's proprietors, someone will acquire that commercial asset and your maintenance service is assured.

Expect to pay 25% for payroll maintenance as against the more usual 10% for accounting systems.

Package maintenance usually involves the distribution of complete new copies of the programs to all users and, surprising as it may seem, will often be necessary four or five times a year. Take out a maintenance contract and bring the new programs into use when they arrive.

The introduction of statutory sick pay will have a significant impact on the supply of payroll packages. It will stimulate an interest in personnel systems to which it is related through the recording of employee absence data. Personnel systems have implications for data protection with a desire to lock the dedicated computer up in a secure room or, perhaps, put it under the security protections offered by an outside bureau.

Payroll will never be the same again.



SCHMITT . . . Q-pac's market image has suffered.

You make your system work. Our Productivity Tools make it work harder.

The human resource of the Data Centre is just as crucial as the hardware and software resources. Our range of **Productivity Tools** helps Data Centre managers deal with the problems which interfere the most with the efficiency of large data centres: the shortage of personnel, slow machine response times, and the difficulties associated with getting access to necessary resources during normal business hours.

Our products help streamline your operation and increase your programmers productivity.

SCREENFORM (Interactive Screenformatting System)

SCREENFORM is an on-line facility designed to create and maintain screen formats for TSO and IMS applications through automatic generation of MFS macros for IMS/DC screens. SCREENFORM provides a simple manner of defining screen formats which is convenient for the user in a 3270 screen environment. Thus time and cost savings in coding and testing.

TSA/PPE (Total System Analyser/Problem Program Evaluator)

Enhances the performance of both system and application program modules. TSA analyses and reports on CPU utilization so that inefficient coding techniques can be quickly identified and corrected. The PPE feature is then applied to those programs and provides a detailed analysis of the actual code efficiencies. The results are better overall systems performance, response times and user service levels.

JCLCHECK for complete validation of JCL

JCLCHECK is a systems utility that provides dramatic savings of both CPU and personnel resources by identifying all job stream JCL errors and many run-time abend situations before test or production runs. JCLCHECK speeds production turnover and saves personnel time.

TONE (Interactive Programming System)

TONE is a high performance interactive time sharing system for use with the OS/VS1 operating system. TONE is designed to extend the availability and effectiveness of the computer system, at the same time reducing overhead by utilizing BTAM for its implementation. TONE is fully transparent to IBM's Time Sharing Option (TSO) for MVS. TONE provides better response times and reduced wait time on terminals.

FSO (Full Screen Output)

FSO provides the 3270 display terminal user with a set of extremely powerful and flexible commands to conveniently review spooled input and output and to determine the status of all jobs in the system. More than 70 commands are available to the system programmer.

Our **Productivity Tools** form part of our range of software products including **Capacity Management** and **Information Management**. Our products allow you to effectively increase the amount of CPU resources available without having to invest in new and costly hardware add-ons.

To get the utmost out of your system just clip the coupon and we will send you comprehensive technical information or, if you prefer, arrange a product presentation.

Name .....
Title .....
Company .....
Address .....

☐ Send me more information concerning your Productivity Tools.

☐ Send me information on your range of Software products. I have indicated below the items which interest me.

	IBM	VSE	MVS	IMS	CICS
DP Manager	☐	☐	☐	☐	
Production Manager	☐	☐	☐	☐	
Systems Manager	☐	☐	☐	☐	
Appl. and Prog. Manager	☐	☐	☐	☐	
Security Manager	☐	☐	☐	☐	

The European Software Company

Harder Working Software

The European Software Company Ltd. Kingswick House, Sunninghill, Berkshire SL5 7BJ - England - Tel.: 0990-23491. Telex: 848980

LONDON · DUBLIN · DUSSELDORF · MUNICH · PARIS · THE HAGUE · STOCKHOLM · MILAN · ROME

SOFTWARE MONTH

1983 APRIL

SUN	MON	TUE		THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

There's only one way to get to know a package – use it!

IT IS a common experience to realise that you are really only just getting to know a package after you have been using it three months. It is by no means unusual to give up a package after six months having finally come to the conclusion that it is not capable of meeting one of your basic requirements.

This persistence is in part caused by an unwillingness to accept defeat, partly because of an unwillingness to accept that the wrong choice was made, but mainly because of the near-impossibility of appreciating what a package can and cannot do in a short evaluation period. There is a lot of interaction in a package and it takes practice, experience and learning to get the hang of it all.

As most of the problems drop away during the learning period, we all live in hope of it coming right in the end, but sometimes it never does.

Checklists and formal selection procedures are essential to ensure that you are not buying a package from someone about to go out of business, who does not own the copyright anyway and whose training courses are given only in Greek. At a practical level, you need to know if the package really does what you want, and can you get on with the support personnel?

This last point does not usually appear on the checklists. But it is not unknown for companies to get phone calls requesting that certain support personnel are not sent again, in case particular individuals get thrown down the stairs. Ask no names: the individuals concerned are now both managing directors of software companies.

The practical problem is this: How do you get to know as much about a package in a three-week evaluation period as you might otherwise learn in three months of use? There is only one answer – use the package. Set yourself a target of at least six demonstration payroll runs. Keep your intention from the salesman until after you have trapped him into saying that his package is easy to use.

A demonstration payroll need only consist of six employees. Each demonstration employee can be an anagram of the three employees with the most complexity on your payroll. Use their live data, choose someone else's surname and pick the forenames from someone else again. You do not have to invent test data if you confuse the origins of the real data you use.

Collect this data before you ever meet the package salesman and run it through your existing procedures and programs to obtain the test results. There is no point in doing work that the computer can do for you.

Until your payroll data has been run through the package(s) you are considering, the time you spend with the payroll package salesman and his support analyst is not entirely productive. You need to learn about his package in relation to your data. The salesman has his concepts, philosophy and nice neat payroll example to sell. Not uninteresting perhaps, but not quite what you want to learn.

We all learn things in relation to what we already know, so starting with your own familiar payroll data just means that there is not only a base on which to build, but less to take in. These remarks are more applicable to payroll than systems people, but nevertheless have some relevance to all learning situations.

Ideally, and if you have time, set up a demoostration payroll on more than one package. Setting up a package yourself involves such close working with the supplier's staff that you will find that human relatioooships begin to cloud your objective judgment. Give due weight to your natural prejudice in favour of the first system you set up.

Find out huw much depth of support there is at the supplier you are working with. Judge how willing he is to allow you to build up confidence in what he is selling by mesns of a demunstration.

Surprisingly, some suppliers expect you to spend tens of thousands of pounds on intangible software that you have only been able to understand cooceptually.

If the software is priced at £250, you must expect to pay first and try out afterwards, and there is o considerable risk of not getting your money back if the product is not to your satisfaction.

The initial purchase price is not the only cost you are going to incur with your new payroll system. Your own costs can be significantly affected by the case of use and general efficiency of the package you buy. Remember that your costs arising from the use of the package are many times greater than what you are going to pay the supplier, so seek fine tuning and efficiency possibilities that you can use in the years ahead.

Having identified the points that you like, make sure that they are referred to in the contract. Do this by having the demonstration payroll as well as other documentation referred to in the contract and strike out any "entire agreement" clauses. You cannot expect damages if the software package does not turn out to be what it was sold as, but you should at least get your money back.

Having bought a package, stop fighting and put your efforts into making it work. There are two tasks facing you. Setting up the control or parameter information to suit your convenience and then setting up the employees on the master file. One of the more im-

● Turn to page 24

Payroll package market

MAINFRAMES

Company	Typical price
K-PAYE (KCS 01-680 7474)	£4,500-£8,000
PPL-Cyborg (PPL 01-633 0121)	£15,000 for 1,000 employees. Add 10% per additional 1,000 employees
Q-Pac (MSA 0628 71011)	None available
Unipay (Peterborough Software 0733 41010)	Rental £4,000 plus £175 monthly

MICROS TO PERSONAL COMPUTER

Damanpay (Daman 061-793 7015) CIS Cobol, RP/M	£350
Datasense (01-803 7400) IBM System/38	£2,500-£6,000
Payfact CMG (Haslemere)	£2,787
Payroll (MPSL 01-831 8811) Microcobol	£400
Payroll Plus (Landsoft 01-878 7044) Pet	£150
Paysense (Selwern Systems 0376 519413) CP/M	£500
Peachtree (0628 32711) CIS Cobol	£600
Pet – Listing in Practical Computing April 1982	
Wispay (Wisbech Computer Services 0954 64146) Northstar Horizon CP/M	£2½p per person/week

ROUND UP

SOME recent events in the software industry you may have missed:

■ A committee to advise on software and copyright and to help safeguard users in the UK has been set up by the **Computing Services Association** for its members. One of the first things the committee will look at is the wording of contracts involved in recent disputes about claims to original ownership of products.

■ UK systems and software house **SFL International** has signed up **Intelligeot Industrial Systems** of New Jersey to market its products in the US. The deal will add momentum to SFL's US marketing campaign. IIS will initially distribute SFL's RTL/2 high-level language, and the Magic microcomputer software package.

■ US software house **ABC Management Systems** is suing the international **McCormack & Dodge** for alleged piracy of one of its software packages. AMS claims that M&D broke a licensing arrangement to sell its ABC System, a modelling tool, solely within the US.

■ ICL is considering the use of the logic programming language Prolog for its Contents Addressable File Store (CAFS) controller, which enables selected data to be retrieved from a base at disc transfer speed. Talks recently took place between ICL and an Imperial College team headed by Robert Kowalski, which has developed a version of Prolog.

■ Rapid growth of business graphics is reflected by a spate of orders received by Tesco UK. This month orders have been placed by Lockheed, Standard Oil, Citibank, and the Salk Institute for Biological Studies.

■ UK systems house CAP has offered a cheaper software alternative to the non-stop systems of Tandem and Computer Technology. Called Magus, this software will link two PDP-11 or VAX-11 computers so that programs run on one will be mirrored on the other.

■ Communications company Racal has set up an expert systems division. Initially Racal will develop customised expert systems for the oil industry, but will later branch out into other applications of machine intelligence such as medicine.

■ Seven new software products for the Stratus failsafe computer system have been put on the market. They strengthen the challenge of Stratus to rivals in the market Tandem of the US and Computer Technology of the UK.

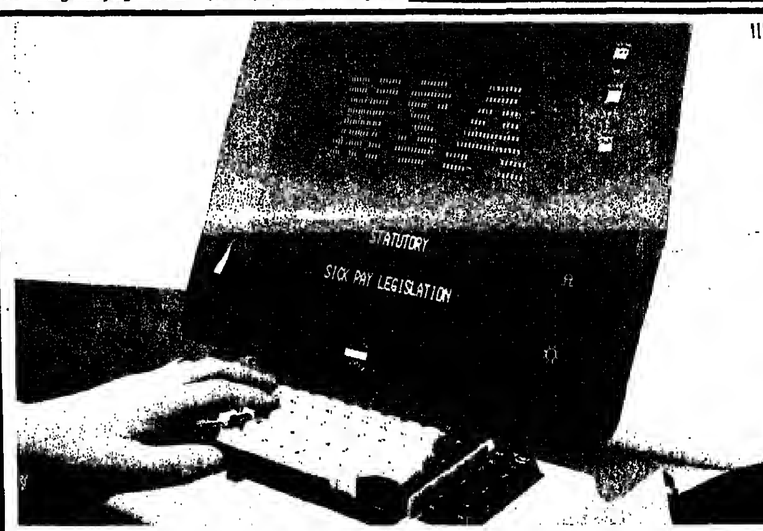
■ "You can sleep with an elephant until it rolls over." This is how **Management Science America**, the world's largest software house, sees its relationship with IBM. "Right now I regard IBM as an ally," says John Imlay, chairman of MSA. "But I emphasise right now."

■ Zilog has introduced a new word processing facility to its System 8000. The Uniplex package builds on facilities already provided by the Unix operating system on which Zilog based the Z8000 OS Zeus.

■ **Bradford University** has followed up the success of its independent **Software Services** company with the launch of **Technology Transfer Services**, to market programs developed by the Postgraduate School of Studies in Industrial Technology.

■ ICL sent a large delegation to the recent World Computer Services Conference in Copenhagen, including Tim Holley, director of financial services, and Basil Cousins, manager of software products. ICL held talks there with over 100 European software companies.

■ A full range of software, including word processing and database management, will be launched with **Commodore's** new business machine in September. This will give the new 720 machine, announced at the Hanover Fair in April, added ammunition in its fight for the 16-bit market, contested by the **IBM** Personal Computer, the **Sirius I**, and **Apple III**.



"Is your payroll system this healthy?"

Your payroll is the most changeable and emotionely charged system within your organisation. And if that wesn't enough the government is now imposing statutory sick pey, end who knows whet else is just around the corner.

You need an on-line payroll end personnel system that is going to expend to meet ell your requirements during the forthcoming years, end at no extra cost. The MSA system has been developed as the most flexible and user friendly on-line peyroll end personnel system available today. It is also availeble with printed reports.

All payroll changes can be incorporated without involving the DP department or re-programming the system. And talking of changes, the one thing that won't change is your payroll routine. The MSA system is capable of meeting all your existing input end output requirements.

If you would like further information, or would like to attend one of MSA's free seminers then simply complete and return the coupon.

MSA invests over one-quarter of its turnover in development to ensure that your payroll is elweys correct. Can you afford not to know more?

MSA

The Software Company

Julia Chamberlain, MSA (Management Science America) Ltd., MSA House, 99 King Street, Maidenhead, Berkshire SL6 1YF. Telephone: Maidenhead (0628) 71011. Telex: 847400.

To: MSA (Management Science America) Ltd., MSA House, 99 King St, Maidenhead, Berkshire SL6 1YF.

☐ Please send me more information.
☐ I'd like to know more about MSA's Payroll Management Seminars.

Name .....
Job title .....
Company name .....
Company address .....
Tel: .....
Mainframe computer model & number .....

SOFTWARE MONTH

The kind of program that can be brought to market . . .

Ferris is a consultant in the UK and US providing marketing and planning advice to computer vendors, particularly in the area of software.

MANY people are hoping to find fame and fortune by selling a program they have written. If you are one of these aspiring vendors, be sure that you are familiar with the two big differences between a piece of customised software and a program product.

Dennis Vohs, in charge of software development for financial applications vendor MSA, explains the first difference: "Writing software which reflects the needs of a single organisation at a particular time is utterly different from writing software which will be able to service a wide variety of organisations over an extended period.

"For example, if you are de-

SOFTSELL

veloping a payroll system, you have to take into account all the different possible ways of making deductions from employee pay cheques . . . It is a very hard task to allow for them all. Packaged software has to be far more flexible and general than custom software".

The other major difference lies in the key role of support and maintenance for the vendor. As Bob Goldman, responsible for development at DBMS vendor Cullinane explains: "The question of ongoing support and enhancement is absolutely crucial.

"Bug fixes and new features have a very strong tendency to reduce software quality and ultimately destroy it, and given the fact that a package is continually being altered, it is important to plan for change in product design."

To handle these problems, package developers have to spend a lot of time at the design stage – far more than is required by customised software. A great deal of thought has to go into all the possible ways the product can be used, and how it will evolve over time. In addition, major efforts have to go into documentation.

For most customised software, documentation ends up being a last-minute, low-budget affair, but for software packages, it generally requires about as much effort as the actual coding and debugging. In other words, if all you have got is a debugged piece of code, you are still miles away.

So what is so social about a software package? The remainder of this article looks at the kind of program that is capable of being brought to market.

Parameterisation. Wherever possible, anything likely to be changed – whether by the vendor implementing enhancements, or by users tailoring their own environment – should be capable of change without alteration to the code.

Such software is often called "table-driven". So for example programs should contain list-processing logic instead of explicit search instructions such as:

IF EMPLOYEE-CITY = LONDON OR EMPLOYER-CITY = WASHINGTON THEN DO SPECIAL-PROCESSING.

By writing software in this way, alterations can often be made by simply adding a new element to external data structures, without necessitating any program modification.

Isolate sensitive code. If danger areas cannot be parameterised, perhaps for efficiency reasons, or compiler limitations, the sensitive code should be isolated into separate modules. These can be separately compiled modules, separate source code modules read into mainline source code at compile time, functions or procedures within a source module, or simply instructions surrounded by a lot of warning comments.

However the isolation takes place, it should be done so as to make future maintenance and enhancement as easy and natural as possible.

Development Tools. By the use of high-level, user-friendly development tools such as report writers and CRT screen formatters, packages are made far more flexible. Future enhancements are often made much easier to implement. If the tools are made available to customers, a far more tailored environment can be developed without draining the vendor's support resources.

Provision for Error Handling. When bugs occur in packages, support staff need to be able to locate their cause. Various things can be done to facilitate this, such as the use of good general purpose error handling routines, and the incorporation of debugging routines to be activated either dynamically or by setting a compile-time switch. When the bug has been fixed, corrections may have to be made at many different sites, so it is important to give thought to how this can be done most economically.

MSA, for example, supplies its customers with a module librarian, and many companies leave unused holes in their executable programs to allow for the insertion of error correcting patches.

Incode Documentation. Clearly, since the original developers may not be supporting the package, code needs to be very well commented. All groups of instructions – whether a separate compilable module or a function or procedure within such a module – should contain a heading explaining what is being done, the inputs and outputs, and interactions with other components. Lines of code should be commented throughout to make them more understandable.

Ease of Use and Training. Some vendors, especially in the mainframe field, make it their normal practice to send staff to train new clients.

However, whether or not this is done, there will inevitably be times when the customer has to rely on his own devices to determine what to do – this is different from custom developed software when often the developers are at hand. Therefore, software package documentation needs to be very full and precise. On the other hand, it needs to be clear.

Authors need to give a lot of thought to the structure of the documentation: what portions to put into different manuals, and what portions to divide into sections of an individual manual. The future success of the product depends in large part on how well they do their job.

Sales Role. When buying a package, many prospects find that listening to the glowing praise of salesmen and reading the effusive descriptions of glossy sales brochures just isn't enough. So they ask to inspect the user documentation, and authors should bear this in mind. It is often necessary to insert a sales-type introduction in reference manuals. These are frequently referred to as "concepts and facilities" sections, when a more accurate title would be "disguised semi-detailed sales brochure".

Internal Documentation. A successful product will have to be maintained by new staff, possibly of average ability. So clearly good internal documentation must be written. There is no set formula for this, but it should be well organised, readable, and contain tutorial sections for those unfamiliar with the product.

Generalised Terminology. Different organisations have different terms for what amounts to the same thing, and where possible terminology should be used which is acceptable to all parties.

For example, when describing organisation charts, MSA refers to "the lowest level of your organisation" and "the next highest level of your organisation" instead of "department" and "division". This principle applies to computer terminology as well as applications, and many systems software vendors in particular make the mistake of introducing gratuitous jargon.

It is unwise to attempt to impose a vocabulary on your customers.

David Ferris

Getting to know the payroll package

● From page 23

portant reasons for the demonstration payroll is that it gives you a base on which to build your operational system.

If you have set up a demonstration payroll on more than one package you know quite a lot about your requirements. All those requirements have to be expressed in the terms of the system you are setting up. Check out what you have set up with three or four pay period runs of employee data. Create an employee master file for the new package by creating literally thousands of input records from your old master file.

A quick and dirty program for this once-in-a-lifetime job will be adequate. Tune the quick and dirty program so that it will always create clean input for the new system. Carry out systems tests on reasonable numbers of employees and then you are ready for parallel running.

Parallel running has two test objectives that can be kept separate.

The first parallel running objective is to see that the calculations and totals are all correct. Achieve this objective by converting the old employee master file and input data again and again each pay period. Totals between the old and new systems are then directly comparable.

The second parallel running test objective is to see that everything correctly carries forward from pay period to pay period. This objective can be met without the necessity to reconcile with the old system. If you try to combine these two test objectives, you are endlessly involved in manually correcting every error you find and then finding the errors you have made in the manual corrections.

On April 6 1983, or when you are ready (whichever comes first), cut over to your new system! Have a disaster plan ready that is a bit more highly developed than a contingency plan.

The time to watch is the second run of the new payroll system. Somehow it seems the problems always arise on account of some failure in the carry-over information, so make sure that your tests are adequate in this area.

And good luck.

ANNOUNCING THE LAUNCH OF THE SOFT OPTION

May sees the start of a totally-new journal for software advertisers. That's when Computer Weekly launches SOFTWARE, the first and only regular UK journal exclusively covering this important field. With a controlled circulation of 20,000 drawn from our specialised sources – visitors to our exhibitions, (including Compec and Compec North), our computer journals (including Computer Weekly and Systems International) and the vast IPC Business Press circulation file – SOFTWARE offers you the advertiser the unique opportunity to reach the computer professionals you need. The people responsible for buying, specifying or influencing the specification of software services. They represent a market we can't afford to ignore. Can you?

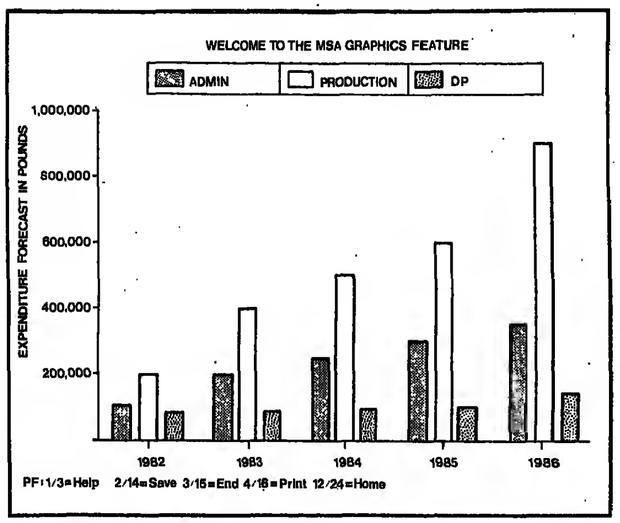
software

First Issue, May 1982

Contact Gordon Bradley 01-661 3126

Micros have been nibbling at edges of DP empires – managers fell in love with their ease of use, says Malcolm Peltu

Why batch accounting will soon be seen as a deviation from the norm



Charts like this one from MSA eliminate unnecessary information

Systems like the IBM 4300 are signalling the end of the first wave of commercial DP, which has been characterised by batch processing controlled by central DP departments.

The 4300 kind of system places large-scale computing power directly in the hands of end users and makes online the natural way of computing.

By 1985, batch processing will be regarded as a deviation rather than the norm. Online will be the standard computing environment with batch as an option, rather than vice versa.

The 4300 is proving to be a major weapon in breaking down one of the last bastions of batch processing accounting. Historically, financial and accounting tasks were the first to be computerised in most organisations. They are therefore rooted in the batch techniques which characterised early commercial DP.

There is, however, nothing about accounting which makes it intrinsically batch oriented. Even a function like payroll, which has a clear batch element, should be viewed as part of an online database inquiry and updating service.

The real breakthrough in end user computing was achieved by micro and personal computers. Interactive working is the norm for microcomputers. Their low cost and ease of use enabled many people, for the first time, to lay their hands on a computer.

> **The 4300 will stimulate use of online accounting on mainframes as users become aware of the benefits.**

Many managers allowed their frustrations with the costs and delays of traditional batch DP to erupt into a love affair with micros. Combined with software like VisiCalc and MagiCalc, which provide basic financial analysis facilities in the form of "electronic worksheets", microcomputers enabled managers to perform many accounting and modelling tasks immediately and on their own.

Microcomputers are now ensconced as an important part of most computing services. But they have been nibbling at the edges of DP empires. With limited data storage, database management and communications facilities, micros are suitable only for tasks with limited, discrete requirements.

What hooked the managers was not so much the microcomputer itself but the immediacy, responsiveness, ease of use and added efficiency which it provided. The IBM 4300 and its competitors provide all these aspects plus the large-scale data handling and communications need required by medium-sized to large organisations.

The typical user of a 4300 regards it as an online tool for direct use throughout the organisation. Accounting and financial requirements form a key part of the benefits expected from any computerisation project.

The user will therefore expect general ledger processing, payroll, financial forecasting, accounts receivable and payable, stock control, financial modelling, fixed assets monitoring and other accounting tasks to fit into the standard online environment.

This is different from the traditional expectation of users in a batch environment. For purely historical reasons, accounting became associated with batch processing because DP started as outgrowths from finance departments.

When cost effective online systems began to become more available in the last five years or so, organisations tended to focus them on new applications rather than disturb their well-oiled batch accounting systems.

The 4300, however, has made a major psychological difference. It will stimulate greater use of online accounting on mainframes as user departments become aware of the benefits of interactive access to large volumes of financial and other data.

The benefits of online accounting are indisputable:

- Accurate answers to timely information. The user has direct control over updating and accessing information in the accounting system.

This means information is more accurate and responses can be given immediately to inquiries from this up-to-date source.

- Reduced need for professional DP staff. Using systems like MSA's Easy-Screen to produce screen formats and do online calculations, the users can do many routine DP applications tasks themselves.
- User commitment and control. Provided the online system can be used by accountants and others without special training, these users will take personal control over the operation of the system.
- Fewer printed reports. A great deal of information will be received by the user directly on the screen. Where printed reports are needed, the user can decide how much is printed and in what format.
- Efficient system tailoring. With appropriate software aids, the user can tailor the system to local needs, say with a particular format for a report, various languages for screen formats and so on.

For users, these operational benefits are obvious. There are also great advantages for DP professionals, although there will be some cut in the demand for some applications programming functions.

For computer professionals, one of the bugbears of commercial DP is the pressure from users for relatively simple routines which can be boring to implement. With appropriate online systems, the user will get off the backs of DP staff for work in the more boring type of applications coding.

The staff released in this way could move either into business systems analysis or systems software development. Either way, these jobs are likely to be more interesting. And DP management will be able to deploy available skilled resources to tackle the tricky tasks of establishing distributed computing networks and database systems.

An online accounting service depends on a number of diverse applications in many locations being able to interlink with each other and with shared information bases. A branch office, for example, may have a requirement for a self-contained small computing facility with occasional need to interface with the corporate information service.

For the end user, the same screen will be used as a window on to all accounting systems. It is therefore important that there are automatic interfaces to the modules that make up and integrate services via an easy to use mechanism. In addition to smooth integration of the variety of systems needs, it is also important to have software and networking tools which enable a diversity of hardware to be interlinked.

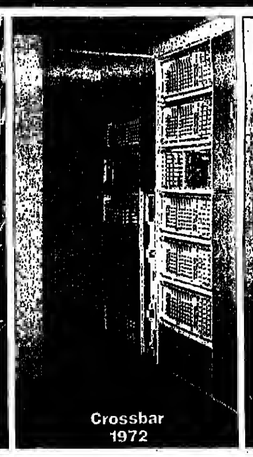
The computing resources in an organisation could now comprise a mix of mainframes with online terminals, smaller systems like the 4300, down to baby microcomputers. Local and corporate accounting requirements could encompass all these machines as well as many different accounting applications.

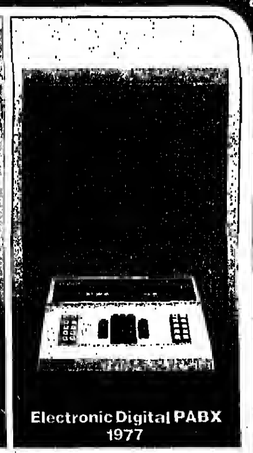
So, although the capability for online accounting is available now, it will still take a few years before online finally inherits the DP world.

Malcolm Peltu is a former editor of Computer Weekly, now a freelance journalist.

Telephone Rentals is . . .

IT INFORMATION TECHNOLOGY 82





. . . the PABX experience!

Yes . . . Telephone Rentals is.

For the last 25 years we've been designing, supplying and installing 100 plus-line PABX systems as BT Approved Suppliers.

Designing and installing them for organisations like the BBC, the Stock Exchange, Hospitals, Local Authorities, Police Authorities. And for many, many famous commercial organisations all over Britain.

First Strowger systems, then Crossbar and now, for 5 years our digital spc PABX.

Telephone Rentals.

Always at the forefront of technology.

And now extending the digital PABX to provide data and text as well as voice channels.

Preparing for the electronic office of the future.

Commercially. Helpfully. **All over Britain**

We have a colour brochure about the TR electronic PABX. Please ask for a copy.

Talk to Telephone Rentals about Electronic Digital PABX

TR Telephone Rentals plc

Britain's largest Company dedicated solely to Business Communications

Appointments
Appointments
Appointments
Appointments

OVER 100,000 COPIES EVERY WEEK

ComputerWeekly

CLASSIFIED DEPARTMENT,
QUADRANT HOUSE,
THE QUADRANT,
SUTTON,
SURREY SM2 5AS.

Box Numbers: Should be addressed to the box number in the advertisement c/o Computer Weekly at the above address.

Classified Rate: £27 per scc
19 x 3 cols = £1,176.
39 x 3 cols = £1,983.

Half Page (19 x 7 cols) = £2,079
(39 x 4 cols) = £2,423
Full Page (39 x 7 cols) = £3,900

Copy Deadline: 3.30 p.m. Monday prior Thursday publication date. Advanced space reservation is advisable.

LONDON 01-661 8121 (10 lines)
CONSULTANCIES SALES
Sales Manager
Chris Prer

DIRECT CLIENT SALES
Telesales Manager
Shobhan Gajjar

MANCHESTER/GLASGOW
Owen Kelly 061 872 8861

BIRMINGHAM/BRISTOL
Vic Sivret 021 356 4838

Classified Production
Steve Lever 01-661 3104

How far would you go for the best IBM opportunities?

To answer this question you would need to know of the excellent salary, recreational facilities and career development opportunities offered by our client. You would have to appreciate the fine opportunity offered in an advanced IBM environment where your skills are rewarded tax free. Probably you would need to know where it is. However:-

We would like to hear from IBM experienced analyst programmers offering strong PL/1 in a variety of application areas. You should be educated to at least HNC level (for visa purposes) and be prepared to take the position on a bachelor status with regular return flights to Europe.

Interviews will be held initially 3 138 miles away in London at Capp's offices within a few days of this advertisement's appearance. You probably have a few more questions that you wish us to answer.

The country? It's SAUDI ARABIA.

For further information and an application form please telephone (24 hour answering service) or write to Nick Foulser quoting ref: CW 115-2F. YOU COULD GO FAR!

FINANCIAL SYSTEMS – **ANALYST/PROGRAMMERS** to C. £22,500 tax free
3-5 years systems and programming experience preferably working on financial and administrative applications in an IMS environment. Experience of SPF/TSO would be a great advantage.

MATERIALS CONTROL – **SENIOR PROGRAMMERS** to C. £22,500 tax free
3-5 years programming experience with strong knowledge of PL/1, IMS DB. If in addition to these basic requirements you can offer Cobol, TSO or MARK IV we would be very pleased to hear from you.

ENGINEERING SYSTEMS – **ANALYST/PROGRAMMER** to C. £22,500 tax free
For the more technical person offering more than 3 years experience of PL/1 and Fortran, probably educated to degree level in a technical subject. Engineering programming experience is essential with graphics or simulation being desirable.

CAPP ASSOCIATES
01-686 9693
Capp House, 96d South End, Croydon CR9 3SD.
International & UK Recruitment Consultants

The Computer Board and Research Councils

Joint Network Team

Applications are invited for a post in a small specialist team co-ordinating the expansion of data communications services in the University/Research Council community.

The team's work includes:–
- planning a community-wide hierarchy of interlinked local and long-haul networks.
- the development of communications components such as packet-switches, high speed local networks, terminal concentrators and intelligent network adaptors.
- the specification and implementation of protocols for Open System Interconnection.

The post offers the opportunity to participate in a variety of stimulating projects in the rapidly growing field of Information Technology.

Applicants must have technical knowledge and experience of direct relevance to the team's work. The post involves some travel.

The team is based at the Rutherford Appleton Laboratory of the Science and Engineering Research Council. The appointment will be in the Higher Scientific Officer grade within the salary range £6,840-£9,126, depending on age and experience.

Some assistance with expenses incurred in house sale/purchase may be available.

Applicants should contact the **Recruitment Office, Rutherford Appleton Laboratory, Chilton, Didcot, Oxon OX11 0QX. Tel. Abingdon (0235) 21900 Ext. 510, quoting ref. VN071.**

Closing date: 6th August, 1982.

(0200)

FIELD SERVICE ENGINEERS
8K + O/T + S/BY + CAR CHOICE
Superb opportunity to join a leading Manufacturer of prestige Minis, super minis and systems. This company believes its Engineers should be software involved and offers excellent software/op. system training at its own centre.
Team working environment – possible foreign travel (voluntary) – internal promotions – a chance to get into systems.
If you have a sound technical background, seek to enhance your career into 32 Bit CPU's and systems – then ring NOW.
If you already have a super Mini system background this could be reflected in a basic of up to £12k in a managerial or support role.
Don't delay Ring Mike Today
01-548 8441 or 01-394 2369 (after 7pm)
AB EXECUTIVE KINGSTON
(0221)

EUROPEAN INSTITUTE OF BUSINESS ADMINISTRATION
seeks
1 FORTRAN ANALYSTE PROGRAMMER
Good level english required.
Send C.V., photo références to
PERSONNEL OFFICE
Bd de Constance
77305 FONTAINEBLEAU Cédex
FRANCE

ANALYST/PROGRAMMER (MINI SYSTEMS)
N. LONDON — TO £9K + CAR

An attractive opportunity exists for an experienced Analyst/Programmer who has been primarily involved in interactive systems. Based ideally on DG Nova using Cobol.

The successful candidate should have at least 2 years' experience where his/her role has encompassed design, programming and support.

To discuss this position in more detail, Contact Shirley Francis quoting ref: 8174 on the number below.

LLOYD CHAPMAN ASSOCIATES
01-499 7761
(0212)

University of London Computer Centre
Programmer/Analyst in User Support

The University of London Computer Centre is a national centre and provides a computer service to the University of London and to Universities in the South East and South West of England. The Centre is currently equipped with Control Data 7600, 6600, 6400 and Cyber 72 computers and supports a large communications network of remote batch and keyboard terminals.
An exciting development programme which includes the substantial replacement of existing equipment is already in progress. An Amdahl 470/V8 computer has been installed, a Cray-1S will be installed in 1983, and work is well advanced on the development of a new telecommunications system.
The User Support Department is the main interface between users and the computing service, and provides advisory, documentation and user education services, compilers, graphics and applications packages and libraries.
A programmer/analyst is required to join the team currently engaged in the provision of the Advisory, Documentation and User Education Service. Applicants should preferably be graduates or postgraduates with a keen interest in the provision of user services, and have the ability to communicate clearly.
Salary will be commensurate with age, relevant qualifications and experience on scales £6,288 to £10,575 (under review) plus £1,035 London Allowance.
Further details and application forms are available from the Assistant Secretary, ULCC, 20 Guilford Street, London WC1N 1DZ. Telephone: 01-405 8400.
Applications close two weeks from the date of the advertisement.
(0231)

SALES EXECUTIVES

SALES EXECUTIVES – MICROS & MINIS
Good prospects with a major UK supplier to cover Greater London area. Basic to £8k. Car £20k

SALES EXECUTIVES – BUREAU & S.W.
Reliability and security offered by large supplier of bureau, turnkey, SW and consultancy services. Basic neg. Car (automatic). to £20k

SALES EXECUTIVES – SUPER MICROS
To sell Super Micro Networks. Based in London. Basic to £10k Guarantee. Car or allowance. £20k

PRODUCT MANAGERS – PERIPHERALS
Large American Multi National has vacancies for European Marketing Managers. High basic salary. Fridge benefits. Car.

SALES EXECUTIVES – MINIS
Major International Manufacturer requires experienced Sales Executives for West London. High basic. Car £20k.

Plus many other good sales vacancies.
Telephone for an appointment.

SDS CONSULTANTS
COMPUTER PERSONNEL CONSULTANTS
150 Regent Street
London W1R 5FA
Tel: 01-439 6288
AFTER 7.30 p.m. & WEEKENDS 0444 458804
(0238)

TRIDENT CONTRACTS

Last longer than the World Cup and Murray Mints put together

FREELANCE OPPORTUNITIES

SOUTHERN 0252 516141

APL Programmers
BURROUGHS 66/6800 DMS 11 CDBDL
Michael Jackson Structured techniques with CDBOL
Analysts with Life Assurence or Financial background
Analysts various Systems
UNIVAC 1100 COBOL some with DMS
UNIVAC 90/30 OS RPG II
IBM Adabas Analysts/Programmers
IBM COPICS
IBM, OS COBOL
IBM, COBOL, CICS & DL1
IBM PL1 Various requirements
IBM 8100, DPPX, DPCX, COBOL
IBM SYSTEM 34, RPG II
IBM 4300 RPG II
IBM COBOL, CICS & OPAC
IBM CICS (DMSI
IBM IMS DB/DC PROGRAMMER
SYSTEMS DESIGNERS
IBM CMS CDBOL
IBM CICS, VTAM, COBOL/ASSEMBLER
IBM MARK IV
IBM PL1, SHADOW
IBM System Programmers VM/CMS
IBM MVS COBDL SHADOW IOMS
IBM Assembler on-line DATABASE & TASK MASTER
IBM SYSTEM 38 RPG III
IBM PL1 to COBOL CONVERSIDN expertise
HONEYWELL DPS4, IPS, CDBOL
HONEYWELL DPSB COBOL
PROGRAMMERS
ICL ME29 COBDL
ICL VMEB, IDMS
ICL Range COBOL
ICL SYSTEM 10 ASSEMBLER
ICL SYSTEM 25 ASSEMBLER
ICL Software Programmer VMEB (S3]
PDP RSTS/E BASIC + or BASIC + 2 (some with DATABOSS)
PDP RSX11M BASIC + 2
VAX BASIC
VAX SYSTEL
VAX CDBOL
SYCOR Expertlee
HP3000 COBOL
WANG COBOL or BASIC
FORTRAN PROGRAMMERS
PASCAL PROGRAMMERS
TANDEM any levels (URGENT)
CORAL 66
VENTEK DATAPOINT, DATABUS
DATA GENERAL INFOS COBOL
8086, MDS, ICE, MTOS, PLM Programmers
VARIAN V77 COBOL, ASSEMBLER
Herdware Engineers
ABS Multibus Simple
SM1 CMC REALITY packagea

SYSTEM X
Contact: STEVE WHITING, NEIL SMITH, STEVE CASEY, DEREK WADHAM, DAVE PEART, DAVE LONKHURST, KEITH TAYLOR, PETER HOLLIDAY, MARK ATKINSON or SANDRA CAREY

URGENT
ICL COBDL VMEB
SOME WITH IDMS or TPMS
40 REQUIREMENTS ASAP

URGENT
SYSTEM X
SDFTWARE ENGINEER
12 REQUIREMENTS ASAP

OVERSEAS 0252 516141

SAUDI ARABIA
Operations Analyst – Programmers – Analysts – Systems Designers/Consultents
IBM Large Systems and Commercial experience for Long term assignments
Commencing July 1982
Contact Bill Evans

HOLLAND
PROG/ANALYST–Start July/August–Long-term assignment
IBM FORTRAN MARK IV and Graphics Technical Application
Several Prog/Analyst – Start July/August, 6 months +
IBM DOS COBOL and AWABAS
Manufacturing applications
Contact: Bill Evans

OPERATORS 0252 516141

URGENT
BURROUGHS 67/6800
SHIFT LEADER on long term
Contact: ALAN PAINE

MIDLANDS & NORTH 021-742 4431

ICL VMEB COBOL IDMS or TPMS All levels
IBM, PL1 All levels
IBM CICS DL1 COBOL
IBM COBOL with IMS
IBM SYSTEM 34 RPG II A/P – Merseyside
UNIVAC 1100
UNIVAC 1100 DMS, TIP, Systems Programmer
OS MVS CICS JCL Writer
IDMS DATABASE Administrator
Analysts Various Systems
PDP RSX11/M BASIC + or BASIC + 2
PDP/RSTS/E BASIC +
FORTRAN PROGRAMMERS

URGENT
IBM ANALYSTS manufacturing background ASAP
UNIVA OS3 RPG PRDGRAMMERS
RTL 2 Progremmers
Contact: NEIL E. SMITH or KAREN LONGCROFT

PERMANENT VACANCIES 0252 516141

IBM Analysts and Progremmers
COBOL, DL1, CICS – SOUTH AFRICA
IBM SYSTEM 34
RPG II A/Pa
SURREY to £11K
(Retraining will be given on RPG III)
HP3000 COBOL PROGRAMMERS or ANALYST PROGRAMMER
Any commercial experience, various locations including Surrey, Middlesex, Berks. Excellent salaries plus relocation.
For further advice on these career moves contact Peter Jansen or Bill Evans or write enclosing a detailed CV

0149

TRIDENT COMPUTER SERVICES PLC

THE COMPANY THAT CARES

TRIDENT HOUSE,
38/44 VICTORIA ROAD, FARNBOROUGH, HANTS, GU14 7UD. Telex: 858 233
Tel: Farnborough (0252) 516141

ELMDON HOUSE,
2291 COVENTRY ROAD, SHELDON, BIRMINGHAM B26 3PS
Tel: 021-742 4431

Licensed by the D.O.E. as an Employment Agency & Employment Business SE(B) 1490

ROLFE & NOLAN COMPUTER SERVICES P.L.C.

the ultimate in DEC timesharing systems

● 5× PDP 11/70 ● VAX 11/750 ● PDP 11/44 ● RSTS/E ● VMS ● RSX ● BASIC+/+2 ●

● 7 Mb of core ● 2500 Mb of on-line storage ● 2 computer centres in the City ● On-line to 100+ clients in 8 countries ●

Rolfe & Nolan Computer Services plc is one of the U.K.'s fastest growing timesharing bureaux – followers of the Stock Market will have noticed their share values very nearly double recently, after yet another record year.

Acknowledged leaders in the field of providing d.p. services to Commodity Brokers, they have also expanded into new applications areas and now offer a comprehensive range of commercial timesharing systems based on the latest DEC hardware and software, including:

commodity accounting; payroll; stock and production control; general accounting systems; financial modelling; word processing.

With further expansion planned, they now wish to appoint two experienced Programmer Analysts to become involved in all aspects of the design, development and implementation of complex interactive systems, liaising with and supporting the company's clients.

Two Senior Programmer Analysts
£10K — £12K

In addition to a high level of self-motivation, you should have:

- **Sound academic qualifications**
- **At least 3 years' experience of DEC BASIC+ or BASIC+2**
- **In-depth knowledge of either RSTS, VMS or RSX**
- **Strong commercial applications experience**

The company has much to offer – varied applications involvement, promotion and salary reviews strictly on merit, an informal but professional working environment and excellent prospects to move towards project leadership roles.

BL

For a strictly confidential discussion on these opportunities, contact Barry Latchford on the number below or on Newick (STD 082572) 3407 after 7.30 p.m. Alternatively, write to us as advising consultants quoting ref. 387 and enclosing a brief career history.

Initial interviews will be conducted in London. 102151

Barry Latchford Associates
Blair House, 7 Hazelgrove Road, Haywards Heath, West Sussex RH16 3PH
Tel: (0444) 459815/6/7

MINI SALES OPORTUNITIES
ROLLS-ROYCE BENEFITS

* Basic 12-15k
* On Target £45,000
* Choice of Car
* BUPA
* Life Insurance
* Manufacturer

Our client a leading British mini-mico computer manufacturer is seeking highly motivated and ambitious Sales Executivas to join a small cohesive sales team, selling into commercial – industrial and scientific markets. This leader wants to extend the reputation for reliability and performance by building on its existing impressive growth of 800% per year with turnover in the millions. With realistic quotas and generous basic, highly ambitious sales executives capable of demonstrating a provan track record in Computer hardware can expect early promotion and real rewards in a dynamic environment that only real growth can offer. If you feel capable of this challenge and live in London, Midlands or Home Counties then call Georgs or Alan today but hurry!

ALLTRONICS PEOPLE (AGY)
01-543 4844

Adv. Unit (02711)

PROGRAMMER
UK AND OVERSEAS

We are a firm of consulting civil engineers and transportation planners based in Basingstoke, Hampshire with a heavy workload for both UK and overseas clients. We have a staff of 7 programmers and are looking for a further programmer with at least one year's experience in Fortran since leaving university or HNC. Although based in Basingstoke, the successful candidate will be expected to be available to travel and work in the Middle East if required.

For application form please write to or telephone Mrs Ann Hill, Scott Wilson Kirkpatrick & Partners, Scott House, Basing View, Basingstoke, Hants RG21 2JG. Tel: Basingstoke (0256) 61161.

(02711)

FOR

CLASSIFIED
ADVERTISING USE

DIRECT LINE
01-661 0121

USE YOUR TECH SUPPORT EXPERIENCE TO MOVE INTO MICRO-SALES

You are in your early-mid 20s and have a background in Tech Support. You wish to use your drive and knowledge to move into the high earning bracket of Micro Sales.

Based in Central London you will earn **£15K + CAR** this year. For further details of this exceptional opportunity ring Brian Mewdsley.

LLOYD CHAPMAN ASSOCIATES
01-499 7761

(02707)

ANALYST PROGRAMMER

ENGLISH SEWING LTD., part of the Tootal Group, are a well-established company manufacturing and distributing sewing threads and accessories. They require an ANALYST PROGRAMMER in the Data Processing Department based in central Manchester.

The job will initially involve writing and testing programs from specifications and providing assistance in the implementation and support of live systems for a multiple ME29 configuration. Major redevelopments of the sales order processing and stock control systems are underway.

Candidates must have a minimum of two years' ICL 1900 COBOL programming experience, using interactive development facilities. In addition, TP8 experience would be desirable and a knowledge of MAC, CL, DDS, FILETAB and PLAN would be advantageous.

Please write giving details of qualifications, experience, age and salary, to:

STAFF MANAGER
TOOTAL GROUP plc
56 Oxford Street, Manchester M60 7HJ

Compucorp

Comms. Support Specialist
(International Travel)

Berks. based **starting salary £13,000 - £16,000**

Compucorp is a market leader in the manufacture and supply of Word Processing and Data Processing systems to the world market. Their international support group, based in Slough, Berks, provides pre and post sales product support to distributors and agencies around the world except for continental America.

The group provides product support and specialist applications support. Each member of the team is responsible for a particular specialist subject. The communications specialist will be responsible for advising and assisting distributors' technical staff on a wide range of communications topics.

There will include the usual asynchronous and asynchronous telecommunications protocols, wide area and local area networking and communications interfacing. Candidates will be software orientated with a good understanding of the hardware involved.

There will be an occasional requirement for developing specials for clients which will require a good practical implementation ability.

The company offers 20 days annual holiday, free life assurance, BUPA and relocation assistance where applicable.

Apply in confidence to Terry Harvey by sending personal and career details, or contact him for an application form, evenings Gt. Missenden (02406) 4705 or daytime as below.

(02711)

HR **H. R. Associates Limited** HR
Executive Computing and Telecommunications Consultants
Hill House, Hill Avenue, Amersham, Bucks, HP6 5BG. Tel: 02403 28383

SYSTEMS & PROGRAMMING

ANALYST/PROGRAMMERS £12,000
IBM COBOL LONDON

SUBSIDISED MORTGAGE, PENSION & LIFE ASS, FREE LUNCH, FLEXI HOURS and EARLY REVIEW. These opportunities are offered by this international company who are looking for Analyst/Programmers to work on large DEVELOPMENT projects. They retain IBM 4300 machines running under DOS/VSE using COBOL, CICS and DL/1. You should have a minimum of 2 years' IBM COBOL with some analysis and user liaison experience. S.6402

PROGRAMMERS £10,000
ICL COBOL LONDON

Our client, a dynamic organisation, has recently acquired an ICL 2900 machine and seeks to recruit two programmers. Ideal applicants should have, a minimum of 2 years' ICL 2900 VME COBOL preferably with some SCL experience. Opportunities include TRAINING on IDMS and TPNS. These positions offer scope for promotion and large NEW DEVELOPMENT projects. S.6397

PROGRAMMERS £10,500
IBM PL/1 LONDON

This expanding city organisation is looking to recruit several PL/1 programmers to work on a wide variety of projects. Applicants should have a minimum of 18 months' PL/1, a good standard of education and ability to deal with users. Company offers TRAINING in DATABASE, excellent promotional prospects, variety and stability. S.6417

PROGRAMMERS £10,000
IBM COBOL LONDON

TRAINING IN CICS and DL/1. Excellent opportunities have arisen for programmers with a minimum of 18 months' IBM COBOL, within this prestigious company. This is an excellent opportunity to join an expanding data processing department and become involved in a variety of systems. S.6405

PROGRAMMERS £10,000
MINI COBOL LONDON

Subsidised Mortgage! This major Merchant Bankers based in the City is looking to recruit programmers to work on a variety of financial projects. They retain WANG machines and ideal applicants will have WANG COBOL, but ANY COBOL will be considered. This is an excellent opportunity for ambitious people who are confident to deal with users. F.6376

PROGRAMMER/ANALYSTS £11,000
HONEYWELL COBOL
E. LONDON/ESSEX

Our client, a large manufacturing company based on Essex/East London borders, is currently looking for programmer analysts. Applicants should have 2 years' programming experience with some systems involvement. They retain Honeywell 64 machines under GCOS using COBOL and DATABASE. The company offers an excellent benefit package and career advancement. F.6418

ANALYST PROGRAMMERS
c£10,500
RPG II cLONDON

Experienced RPG II Analyst Programmer required to assist in the development of this new Banking installation. The current hardware being used is an IBM System 34. Ideally you will have around two years' experience which need not necessarily contain banking. The benefits offered by the Company are excellent and include subsidised mortgage. M.6334

SOFTWARE HOUSE £8-14,000
RPG II AND RPG III ONLY LONDON

Our client is a software house who specialise in GSD projects. They are based in the City of London and require a minimum of one year of either RPG III or RPG II programming experience. They would be pleased to hear from applicants with software house experience but who wish to expand or concentrate their efforts on GSD users. M.6120

DATA GENERAL c£9,000
BASIC+2 cLONDON

Well-known company based in Central London require two experienced Basic +2 Programmers to help in the development of client systems. Ideally you will have at least 18 months' commercial experience on mini hardware not necessarily Data General. Prospects are good as training will be given in Systems Analysis. F.6420

GSD ANALYST c£9250
WILL TRAIN cLONDON

This well-known manufacturing company are looking for either bright Programmers to continue programming whilst being trained in Analysis or experienced Analyst Programmers. All applicants should have at least 18 months' RPG II or III experience and be prepared to work extensively on new development projects revolving around what is currently System 34 hardware. M.6419

IBM SYSTEM 38 c£9,500
TRAINING SURREY

Excellent opportunity for an experienced RPG II Programmer to progress onto IBM latest GSD System. At least one year's RPG II programming in a commercial environment. Full training will be given where necessary along with the opportunity to train in Systems Design. Good company package including 4 weeks' holidays, staff restaurant and car parking facilities. M.6416

PROGRAMMERS to £12,000
BASIC +, +2 OR AIMS
LONDON/H. COUNTIES

We are in contact with several companies in London and the Home Counties who are looking for Programmers with minimum 18 months' BASIC +, +2, or AIMS, on DEC PDP computers. Clients include Banks, Brokers and Manufacturers, they offer generous company pakages and excellent salaries. F.GEN

Datascene International Limited
datascene
01-439 7871
24 hour answer phone
London & Brussels
Sceptre House 169/173 Regent Street London W1R 7FB. Telex: 25851.
(0230)

ADVANCED TECHNICAL SERVICES

TELECOMMUNICATIONS EXPERTS

UP TO £28,000 INCLUSIVE **SWITZERLAND & ITALY**

Our client, one of the foremost telecommunications companies in Europe, are looking for a number of people to work either in Switzerland or Italy. To qualify for a position in Switzerland you should have several years of in-depth telecommunications expertise in quality assurance or similar, preferably on Vax equipment. You must also speak fluent German. To work in Italy you must have had experience of either ITT System 12/40 or network 2000. Systems engineering experience on either of these machines could be useful. Italian is not necessary in this case. These are super opportunities to widen your experience and gain the benefits of working abroad.

SYSTEMS ANALYSTS/LECTURERS c £11,000 BERKSHIRE

If you are a really experienced Systems Analyst with experience of VME and/or DME or TPMS or indeed any other TP monitor and you are looking for a change, this could be your opportunity. Our client is looking for people who would like to use their DP knowledge and communications skills to train people to become effective Systems Analysts. Call for further details!

SENIOR SYSTEMS ANALYST £11,500 SURREY

Ideally applicants should have minimum four years' analysis on IBM equipment, under DOS or DOS/VSE and CICS. Programming background advantageous but not essential. Applicants must have done major project from implementation to support. Applications include sales, purchase and nominal ledgers. You will also be required to deputise for Project Manager. Excellent career prospects and fringe benefits.

PROGRAMMERS £8,000-£12,000 LONDON & HOME COUNTIES

CALLING ALL IBM COBOL PROGRAMMERS

If you have a minimum of two years' experience under DOS/DOS VSE, with or without CICS, our client would like to hear from you.
VM/CMS or DLI would be an added bonus. We offer a large selection of interesting positions, high salaries and perks.

PROGRAMMER/TEAM LEADER c £11,000 LONDON

Our client wishes to recruit a DP professional with five years' programming experience which should include some IBM Cobol, also writing progrsm specifications on large machines. Previous supervisory experience is essential, along with Database, On-Line Systems and Modular Programming techniques, to take charge of a significant development team and existing systems.

BIREN HOUSE
64 WILTON ROAD
LONDON SW1V 1DE

TEL. 01-828 5792 (24 HOURS)
(0217)

CONSULTANTS

CITY

ATTRACTIVE 5 FIGURE SALARY

IMT is an established consultancy in the areas of IBM mainframes and online databases.
Due to expansion of our services, opportunities exist for experienced consultants to contribute to a newly formed team with creative ideas.

Applicants, male or female, should have a minimum of 3 years' experience in a consultancy environment, and possess skills in:

- Feasibility studies
- System sizing
- Hardware selection
- Project management
- Database/Network design.

The ability to communicate effectively with both technical and senior management staff is important.

If you envisage yourself in a challenging role, please apply in confidence to Ralph Reed at the address below, giving details of your career to date.

imt Information Management Techniques (0233)
12 Vandy Street, London EC2. 01-377 4902

HEWLETT-PACKARD OPPORTUNITIES

Due to the rapid expansion of the HP sector we have many clients, some of whom are first time users, seeking to recruit experienced programmers and analysts. Obviously HP experience is preferable but not a prerequisite as some users are prepared to retrain.

ANALYST/PROGRAMMER W. LONDON to £11,000
International company based in West London seeks an experienced analyst/programmer to join their development team. The successful candidate will eventually take over the project and be responsible for all maintenance and development. Applicants must have 3 years Cobol including some HP experience and knowledge of IMAGE database.

SENIOR ANALYST/PROG HOME COUNTIES to £12,000
Installation based West of London with a heavy commitment to DP requires a senior analyst/programmer to join their expanding department. Applicants should have around 4 years experience gained preferably on HP equipment although other manufacturers would be considered, especially if on line and database techniques have been deployed. Excellent career prospects are offered along with all large company benefits.

ANALYST/PROGRAMMER LONDON c £9,000
Software house has requirement for programmers and analyst/programmers to work in either their UK or International project teams. The minimum requirement is 2 years HP Cobol gained in any commercial environment.

ANALYST/PROGRAMMER SURREY c £9,000
Manufacturing company utilising a HP 3000 with a possible upgrade in the near future requires an analyst/programmer to join their small team. Applicants should have in excess of 2 years experience gained in any commercial environment as training on HP systems and software will be given where necessary.

PROGRAMMERS LONDON c £9,000
International financial concern seeks programmers with around 18 months commercial COBOL experience. Applicants with a good academic background are preferred and in return training will be given on HP equipment. For the successful candidate there will be quick progression to senior programmer levels. Perks include annual bonus, subsidised mortgage and some overseas travel.

ANALYST/PROGRAMMER LONDON c £9,500
Small but expanding HP 3000 site seeks an analyst/programmer to join their team. The successful candidate will be involved in development of new systems and possibly assume a management role in the near future.

This is just a small selection of current requirements: for details of these and others not advertised call us now.

APEX COMPUTER RECRUITMENT LTD

LONDON OFFICE
69 Grays Inn Road
London WC1X 8TL
Tel: 01-404 4821 24 hrs

BRUSSELS OFFICE
Rue Gatti de Gamond
Ucele 1060 Brussels
Tel: 010 322-377 4813

Apex
(0236)

IMMEDIATE CONTRACTS FOR PROGRAMMERS

ANALYST PROGRAMMER	Bromley	IBM 4300 APL
ANALYST PROGRAMMER	Croydon	IBM COBOL IMS DB/DC
ANALYST PROGRAMMER	London	IBM SYS 34 RPGII
ANALYST PROGRAMMER	Bromley	DEC DIBOL RSTS
DESIGNER	Croydon	IBM COBOL IMS DB/DC
ANALYST PROGRAMMER	Croydon	DEC RSX MACRO

PERMANENT ASSIGNMENTS

SENIOR PROG £7-9k + LARGE CO BENEFITS
APL IBM VM CMS

TLP
For further details contact NIC POLAND
TLP
A division of Tate & Lyle Industries Ltd.
Leon House, High Street, Croydon CR9 3NH
01-686 5666
A member of the Tate & Lyle PLC Group

Members of Computing Services Association
(0230)

Senior Project Engineer

Software

circa £10,000 (October review)

At Scottish & Newcastle Breweries plc we have been making major advancements in process control with Intel Microprocessors supported by two MDS Intellec Systems.

The scale of our brewing operation — 4 major brewing centres in Edinburgh, Newcastle and Manchester producing large volumes of our McEwens, Youngers, Newcastle and Harp ales and lagers — present massive scope for plant systems development.

Taking up this challenge is our Group Automation Team of electronics, automation and software engineers operating from our base in Edinburgh.

To strengthen this team we have an excellent career opportunity for a Senior Software Engineer to specialise in software design and maintenance using high level languages.

You should be an innovator, holding a degree in computing science or allied subjects with programming experience allied to an understanding of computers gained in a Scientific or Engineering environment.

Rewards will include a salary of circa £10,000 (review in October), excellent non-contributory pension and life assurance scheme, free beer allowance, generous hotel concessions and substantial assistance with re-location costs where applicable.

Qualified candidates, male or female, should write or telephone for application form to:

Thea Williamson, Personnel Assistant,
Scottish & Newcastle Beer Production Limited,
111 Holyrood Road, Edinburgh EH8 8YS
Telephone 031-556 2591 ext. 2692.

Scottish & Newcastle Breweries plc
(01965)

FOR CLASSIFIED ADVERTISING USE **DIRECT LINE 01-661 0121**

PROGRAMMERS IBM/COBOL/Insurance	to 10K London/West Sussex
SENIOR PROGRAMMER PL1/Database/CICS	to £15K Croydon/Beds./Berks
SALES EXECUTIVES Micros/Peripherals	to £25K Sutton, Surrey
ANALYST PROGRAMMERS COBOL IBM/HP/ICL ME29	to £10K London/Essex/Sussex/Hants.
OPERATOR IBM 4341	to £7K West Sussex
ANALYSTS IBM/COPICS	to £12K Plymouth/London/Middx.
SYSTEMS ANALYST & PROGRAMMERS On Line exp/VME8 or K/or George 3	to £11K Surrey/East Anglia/Bucks
SOFTWARE DESIGNERS COBOL/PASCAL/RTL2	to 13K Sussex.
SYSTEMS/APPLICATIONS PROGRAMMERS Strong IBM environment preferred	to £12K West Midlands
ANALYST PROGRAMMERS ICL 2966/Database/Fortran/Pascal	to £12K London
ANALYST PROGRAMMERS DEC/DG/WANG/BASIC	to £12K Berks/Bucks
ANALYST PROGRAMMERS RPG3/System 38	to £10K Norfolk
SOFTWARE ENGINEERS RADAR/Military/ATE/CORAL	to 11K Home Counties
PRINCIPAL CONSULTANTS Commercial Software exp/Accounting qualifications Oslo General COBOL	to 15K Berks.
PROGRAMMER ANALYSTS IBM/ICL COBOL	to £9K N. London/Scotland
PROJECT LEADERS/MANAGERS	to £13.5K London/Home Counties.
PROGRAMMERS CAD/CAM	to £12K Essex
ANALYSTS Manufacturing/Production	to £12K Wales/Bristol
SENIOR PROGRAMMERS COBOL/IMS	to £11K Northants/Bristol

For the opportunity to hear about YOUR kind of job throughout the U.K. telephone:

Sloangate The Appointments Register
SLOANGATE LIMITED
214 KINGS ROAD
KINGSTON-UPON-THAMES
SURREY KT2 6KX
24-HR. ANSWERING SERVICE
TELEPHONE: 01-549 6238
(0280)

Logistix Logistix Recruitment Limited
10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

Real-Time Applications

London/EEC: Salaries to £14K

A highly successful British Systems and Software House has outstanding opportunities for real-time software experts from Programmer to Team Leader level. Applicants should offer at least two years' real-time programming experience in either FORTRAN, PASCAL, MACRO II or Assembler. Particular hardware is not important, but you will be expected to have had exposure to a leading mini- or micro-computer. Application areas of interest are: Data Communications and Networks, Message/Packet Switching, Process Control or Defence. Candidates who demonstrate management potential will, of course, be considered for the more senior positions. Ref. L/28/A

Pascal Programmers

H. Counties: Salaries to £10K

The Research and Development division of a leading multi-national corporation requires a number of Programmers to assist in the development of both Applications and Systems Software. All respondents should possess a Degree or H.N.C. in a relevant discipline followed by at least two years in industry. A minimum of one year's development experience on either Intel 8080/5 or Z80 based systems, preferably running under CP/M or UNIX is essential as is fluency in Pascal. A knowledge of protocolling techniques and an Assembler language are useful supplementary skills and will attract a salary premium. Ref. L/28/B

RSX II Applications & Systems

Hants/Surrey: Salary to £12K

On behalf of the Consultancy and Software Services Division of an E.E.C.-based Company we are seeking a number of Systems Engineers and Applications Programmers. Software programming expertise should include fluency in a high level language such as Pascal or Fortran whilst some involvement with an Assembler will be considered a useful secondary programming skill. In certain cases candidates must have actively participated in the development of a distributed processing system where either PDP 11/RSX or VAX/VMS hardware and software is utilised. Additionally, the Company wishes to recruit for its Research & Development Unit a number of programmers who are familiar with M.O.D. hybrid systems where stringent programming and design specifications within a multi-microprocessor environment are employed. Ref. L/28/C

Communications Programmers

Central London: Salary to £10K

A number of Development Engineers are required for the Communications Division of a market leading supplier of message and packet-switching systems. Of particular interest to our client will be Programmer/Designers who have at least two years' experience in the design and development of terminal controllers and protocol convertors, especially where this has required familiarity with bi-synchronous line procedures. Fluency in a high-level language such as Pascal and a working knowledge of Assembler are prime requirements. Applicants who are familiar with IBM, Burroughs or ICL mainframe protocol standards will be especially welcome. Ref. L/28/D

Process Control Systems

Central London: Salaries to £15K

A Systems & Software House, with an excellent reputation for providing total systems solutions, has a number of vacancies for Programmers and Project Leaders with at least two years' Process Control systems experience. Suitable candidates for the senior positions will be required to have had responsibility for system hardware procurement, installation, commissioning and software generation, preferably in the chemical or oil industries. Applicants for the Programming posts should be fluent in an Assembler and a high level language such as Pascal or RTL/2. Although the vast majority of work is in-house, occasional visits to client sites will be required and a degree of mobility is, therefore, essential. Ref. L/28/E

Micro Design Engineers

Wilts/Avon: Salary to £10K

A number of Micro-Processor Design and Development Engineers are sought by a leading micro-computer and semi-conductor manufacturer. As there are a considerable number of positions available, the variety of skills required is, necessarily, diverse. However, experience in one or more of the following areas is essential: customisation of Operating Systems such as CP/M or MP/M, with a salary premium attached to a knowledge of a networking O.S.; compiler and cross-compiler development particularly if utilising PASCAL or C; familiarity with a leading MDS and, also, experience in the design and production of interface hardware and software. A degree of customer contact is a feature of most of these positions and, therefore, an outgoing personality and good communication skills are required. Ref. L/28/F

Micro Software Development

Cambridge: Salaries to £12K

Programmers and Software Team Leaders are urgently required to assist in the development of applications and systems software for a new generation of micro-computers. Successful candidates for the positions of Team Leader will be fluent in a high-level, block structured language and have specified and implemented at least one compiler. Working in-house, their responsibilities will include the design, development and commissioning of systems software and the evaluation of commercial packages submitted by sub-contractors. Programmers will also be expected to offer fluency in a block-structured language and, preferably, have gained the majority of their post-graduate experience on micro-based systems. High standards of documentation and the ability to conform to tight dead-lines are required of all respondents who, in return, will be rewarded by highly competitive salaries and a dynamic working environment. Ref. L/28/G

Navigation Systems

Inner London & Home Counties: Salary to £12K

A highly regarded supplier of precision instruments and electronic devices is seeking several Software Development Engineers for either its Central London support facility or its Thames Valley based Research & Development Laboratory. Suitable applicants must be numerate graduates who are currently involved in the design and development of micro-processor based control systems. Practical programming skills must include total fluency in one or more of: Pascal, Fortran or Macro II. Candidates should have the ability to resolve complex software problems for end users demanding total reliability or where operating conditions are not necessarily conducive to high technology products. Ref. L/28/H

Licensed by D.O.E — Lic. No. SE/6913 (0244)

The Royal Borough has an ambitious approach to the use of computers and computer systems. Currently running on IBM 4341 with VM/SP, DOS – VSE/AF 2, CICS and VSAM. We are shortly moving to VTAM and the linking of 8140s to the 4341. We provide personal computing facilities to a rapidly growing number of users via APL, ADRS, API and BASIC.
We are seeking to fill the following posts in our lively and professional DP Department.

SYSTEMS PROGRAMMER

Ref. CW/711

£10,536-£11,589 p.a. inc. (pay award pending)

We need an experienced Systems Programmer to assist us to maintain the momentum of change in the organisation. Heading a team of four, the position will be responsible for the evaluation, installation, maintenance and development of all software in addition to the development and control of network procedures.
You should have at least three years' experience as a Systems Programmer, sound assembler knowledge and experience of the software currently installed.

PERSONAL COMPUTING OFFICER

Ref. CW/712

£9,999-£11,001 p.a. inc. (pay award pending)

Personal computing is seen as a key area of expansion supplementing our own development projects and allowing user staff to enhance existing and develop new systems.
This work will include conducting feasibility studies into user requirements and recommending the use of personal computing facilities. In addition, the work will also involve the design of systems using B100 and mainframe facilities.
You should have at least five years' D.P. experience including analysis and knowledge of system software in addition to a working knowledge of APL and BASIC.
Benefits for these posts include modern offices, subsidised restaurant, sports and social club, interest-free season ticket loan, generous holiday arrangements and flexitime.

For further information contact Tony Eldred on 937 5464 Ext. B62. Please tel. ext. 282 for application forms. Closing date for application: 23 July 1982.

The Royal Borough of
KENSINGTON & CHELSEA

Applications are welcome from suitable qualified disabled persons

(0243)

FOR CLASSIFIED ADVERTISING USE

DIRECT LINE

01-661 0121

MANAGEMENT OPPORTUNITY
MICRO SALES
£15K BASE + BMW

Top Manufacturer – outstanding product development + marketing support. Build your own team to create new dealership network and expand existing user – Base. Realistic targets will produce earnings of £28K+.

Ideal profile – mid-late twenties with provable record of two-three years on-target performance in Hardware/Software Sales Ref. BM/DVL.

(0223)

LLOYD CHAPMAN ASSOCIATES
01-499 7761

SCIENTIFIC PROGRAMMER

for

COMPUTER AIDED DESIGN

Mullard Southampton is a leader in the dynamic world of the silicon chip; we design, develop and manufacture MOS integrated circuits.

One of our key areas is the **Computer Aided Design** activity which is essential in the design of integrated circuits.

We now offer you the opportunity to join us at the forefront of the micro-electronics world – we need someone (male or female), with programming knowledge and experience in a scientific application, preferably Fortran or Algol, to join our CAD team. The work is varied – ranging from creating systems to programming on dedicated computers with Tektronix graphics.

You will probably have a degree in a relevant scientific subject with an appreciation of electronics and have a couple of years programming experience.

Salary will depend on the experience you can offer us and there are excellent fringe benefits, including generous relocation expenses where necessary.

Please write with details of your qualifications, experience and current salary to: Lucy Ward Dyer, Personnel Officer, Mullard Southampton, Millbrook Industrial Estate, Southampton SO9 7BH. Or telephone Southampton (0703) 775533.

Mullard Southampton

A Brand New IBM Site

INVESTMENT has become a rare word, but to our client it is a significant part of their long-term computing strategy.
Thus investment will include new Hardware, Software and the opening of a BRAND NEW COMPUTER CENTRE in HODDESDON, HERTS. Utilising new IBM 4300 equipment and all the latest technological aids and facilities, the site will form the local pivot for a major development program examining new applications for users in Manufacturing, Distribution, Finance and Commercial areas.
To fully establish the new centre, the company are providing YOU with the opportunity to invest your expertise in this exciting operation. Your return, in terms of career and personal development, will be immense.

PROJECT LEADERS
Communicative skills are paramount as you will be the prime interface between the user and development teams. You should have a sound commercial business background coupled to the technical knowledge associated with analysis and design.

SYSTEMS ANALYSTS
ALL LEVELS ARE REQUIRED - You will be proficient in design techniques and able to play a major role in the successful implementation of systems. IBM hardware/software experience, particularly in the areas of database and teleprocessing, would be a distinct advantage.

PROGRAMMERS
Once again ALL LEVELS should apply. The minimum requirement is 1 year's COBOL gained in any IBM environment. For the Senior roles you will have knowledge of CICS and/or DLI and be able to inspire and train less experienced staff. The company would also like to talk to IBM ASSEMBLER programmers in SOFTWARE and TECHNICAL SUPPORT.

ANALYST/PROGRAMMERS
A stepping-stone to systems analysis. You will have the same skills as above but in addition, design techniques will be required. Potential is a key word in this area.

MISCELLANEOUS
An odd job title, but applications are also invited from those professionals currently developing Mini/Micro systems, APL, Operational Research and Information Processing. The company are in the enviable position of being able to use the technology of the 1980s to investigate, develop and implement new systems and require the skills to match.

In all cases freedom to use your CREATIVE FLAIR and take full advantage of a COMPREHENSIVE PERSONAL DEVELOPMENT POLICY are the principal reasons why you must join our client now! The starting salary – purely negotiable! Our client expects the best available and will pay whatever is necessary to get it. Additional benefits are excellent and a FULL RELOCATION PACKAGE is offered. The new premises will be operational by the end of AUGUST, so those joining now will immediately start at the new location.

MAKE A NOTE!

N.B. *
* BRAND NEW IBM 4300 INSTALLATION!
* PURPOSE-BUILT ENVIRONMENT!
* MAJOR SYSTEMS DEVELOPMENT!
* CREATIVE OPPORTUNITIES!
* OUTSTANDING CAREER PROSPECTS!
SOUNDS GREAT-
MUST RING KNIGHT!

*"OPEN EVENINGS"

With members of our client's DP management, we are holding three open evenings for informal interviews. These are on:

- Tuesday 20th July at Ware Meat House, Baldock Street, Ware, Herts.
- Wednesday 21st July at Stevenage Meat House, High St., Old Town, Stevenage North, Herts.
- Thursday 22nd July at Green Man Hotel, Mulberry Green, Harlow, Essex.

Drop in and see us at any time between 4.30 pm and 10.30 pm. We will provide refreshments and tell you WHY YOU SHOULD BECOME PART OF THIS EXCITING CHALLENGE NOW!

Alternatively, phone us on the number below quoting Ref TE/200 for more information and immediate appointment for interview.

Knight

14 Old Park Lane, London W1Y 4NL.

A member of the Computing Services Association

01-491 4706

OR WHEN BUSY 01-439 3411

Project Manager
£12k plus car
Hourds Computing
Staffordshire

With its excellent reputation for providing full turnkey solutions, bureau and software services to its wide user-base, HOURDS COMPUTING has been steadily expanding since its inception. Based in Stafford and serving users U.K. wide as a Digital OEM, they currently require to employ a PROJECTS MANAGER to fill a senior role in the company with an involvement in its move to VAX/VMS based systems.

The successful candidate will have proven man-management experience, together with a thorough understanding of DEC/Equivalent Mini based systems, preferably RSTS/E, BASIC+, to enable him/her to lead a team of 15/16 people in a multi-project environment. Previous software house experience is not essential, however the ability to meet realistic deadlines on commercial projects is a prime requirement.

Remuneration will include a salary of £12,000, a company car and several attractive fringe benefits.

For further details and early interview telephone PHIL HARKOM **021-643-8501** (business hours) or **021-308-4285** (eves/wkds) or fill in and return the freepost coupon Computer People Midlands, FREEPOST, (no stamp) Alpha Tower, Birmingham B1 1BR.

Name
Address
Tel: (eve/wkds)

Computer People Midlands

IBM SYSTEMS PROGRAMMERS
to $50,000

We have been retained by National Semi-Conductors, one of the world's largest and most successful electronic companies. They have immediate permanent requirements for highly experienced people based in

CALIFORNIA

It is essential to possess a degree in Computer Science or related subject, coupled with an in-depth experience of MVS internals encompassing CICS, ACS/VTAM, SPS, TSO, SPF, and a sound working knowledge of SMP4.

A good appreciation of telecommunications, ideally ASF/VTAM, but TSAM or VTAM would be acceptable.

The successful candidates would be expected to have installed and maintained program products, also to be fully conversant with ASSEMBLER language.

These are exceptional opportunities for highly skilled d.p. professionals who have a strong desire to succeed in a competitive environment.

Contact: Janet Chilvers on 01-437 3942.

Babage

Computer Recruitment Limited

Kent House
87 Regent Street
London W1R 7HF

(0267)

BANKING
W. LONDON IBM 4300
COBOL PROGRAMMERS
SYSTEMS PROGRAMMERS

To £13,000 + cheap mortgage and other banking benefits

This is an opportunity for applications programmers and systems programmers to enter banking, the area where the most sophisticated systems development is taking place, and where long-term career prospects are brightest, and where the rewards are most generous particularly with regard to fringe benefits.

APPLICATIONS PROGRAMMERS should have at least two years' IBM COBOL programming experience. Knowledge of real-time transaction, processing, database, or financial systems would be an advantage.

SYSTEMS PROGRAMMERS should have at least two years' experience of some of the following: DOS/VSE, CICS, TSO, DATABASE, MVS, VM.

For further information, please contact Mark Irens quoting reference.

CW 1507/1

Hutton Executive Selection Ltd.
Hutton House,
Hutton Street London EC4Y 8HR
Telephone: 01-353 7141 (24 hours)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

CONSULTANCY
LONDON: c. £15,000 + car

A leading international consultancy has openings for top-calibre DP professionals who have good all-round commercial applications experience.

You will need to meet all the following requirements:

(1) Good degree
(2) Perfect communication skills and professional manner
(3) 25-32 years old
(4) Proven track record in a variety of application areas and on at least two different computers

You will mainly be involved in pure consultancy but also in project management. This is seen as a logical career step for high fliers who have proved themselves in a user environment and are ready to move forward.

For further information, please contact Mark Irens quoting reference.

CW 1507/3

Hutton Executive Selection Ltd.
Hutton House,
Hutton Street London EC4Y 8HR
Telephone: 01-353 7141 (24 hours)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

FINAL CALL
TULSA U.S.A.
$28-40,000

12-24 MONTHS' CONTRACTS
DIRECTLY EMPLOYED BY
LARGE AIRLINE

VARIOUS LEVELS OF
PROGRAMMERS AND
PROGRAMMERS/ANALYSTS
PL1 IMS MVS
OS JES3 ACP
SABRETALK PARS
INTERVIEWS WITH CLIENTS
NEXT WEEK IN LONDON
EVENINGS 22nd, 23rd
ANYTIME 24th, 25th

IF YOU HAVEN'T ALREADY APPLIED
CALL BOB BOWER NOW – HURRY!!
01-353 7141

REF: CW1507/2

Hutton Executive Selection Ltd.
Hutton House,
Hutton Street London EC4Y 8HR
Telephone: 01-353 7141 (24 hours)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

MANCHESTER
SENIOR ACCOUNT MANAGER

£20,000 GUARANTEED
CAR, EXPENSES, ETC.
GOOD IBM EXPERIENCE
DISTRIBUTIVE DATA PROCESSING
LARGE ACCOUNT EXPERIENCE IN
FINANCIAL/COMMERCIAL
SECTORS

CW 1507/4

NORTH LONDON
PRODUCT MANAGER

ELECTRONIC OFFICE SYSTEMS
C. £17,000 (INC. BONUS) + CAR
TECHNICAL COMMS, BACKGROUND ESSENTIAL AND EXPERIENCE IN E.O.S. OR DESIRE TO MOVE INTO IT.

CW 1507/5

01-353 7141
BOB BOWER
ADVISING DIRECTOR ON
BOTH APPOINTMENTS

Hutton Executive Selection Ltd.
Hutton House,
Hutton Street London EC4Y 8HR
Telephone: 01-353 7141 (24 hours)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

VNG

Setting the highest standards in contracting. Telephone for further details.

KNUTSFORD (0565) 52821
GERRARDS CROSS
(02813) 86355

(0272)

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE
(University of London)
Keppel Street WC1E 7HT

A COMPUTER PROGRAMMER

is needed for the MRC-funded Epidemiological Monitoring Unit in the Department of Medical Statistics and Epidemiology to assist in research on environmental health problems. Candidates should be graduates and have suitable experience. The gross salary will be in the range of £8,070 to £10,876 plus £1,038 London Allowance, depending on experience and qualifications.

Applications, consisting of full curriculum vitae and naming two referees, should be sent to the Assistant Secretary at the above address by 5th August, 1982.

For further information, telephone 01-636 8636 Ext. 244/245.

(0222)

Section Leader
Industrial Automation Division
Rugeley, Staffs.

Advanced industrial automation will be the life blood of Britain's industry of tomorrow, and Thorn EMI Automation are now establishing a strong lead in this rapidly growing field. Due to expansion and new contracts, a key position has been created within a specialist team of Software Engineers at the company's headquarters in Rugeley, Staffordshire.

The team is responsible for a variety of projects in industrial control systems development. Projects involve the use of PDP11, LSI11 and INTEL processors under RSX11M, RSX11S and RMX80.

We are interested to hear from all people who feel they are suitably experienced and qualified. Two years experience will probably be the minimum we will accept and experience with FORTRAN, MACRO II, CORAL 66 and ASSEMBLER would be most relevant, together with leadership of a team of skilled engineers.

The company offers good career opportunities, with wide scope for involvement with interesting projects and modern techniques and technology.

Competitive salaries, large company benefits and appropriate relocation expenses are offered. The company is based in a pleasant rural low-cost housing area.

Please apply in writing to the Personnel Manager

THORN EMI Automation

P.O. Box 4, Rugeley, Staffs.

THORN EMI

University of London
Computer Centre

Network Management

A competent and energetic individual is required to assist the Network Management with a number of new products. These include the planning for and implementation of new networking facilities to enable National, Regional and Local academic computer traffic to access the mainframes at the Centre and also the services available at other major computer centres.

The network to be implemented will use new standard protocols such as X25, Triple X and JTMP.

An ambitious Front End System is being developed at the Centre to support a large number of R.J.E.s and to provide an extensive keyboard service working through P.A.D.s.

Connections will be made to P.S.S. and to an academic Packet Switched Network.

The individual appointed will also play an active part in the management of the Network Support Section which is responsible for the day-to-day operation of the extensive network.

Applicants should have a good technical experience in Data Communications or a directly related field and have the ability to organise and supervise projects. It would be an advantage to have qualifications which are relevant.

The position carries a salary of up to £10,785 (under review) depending on age, qualifications and relevant experience.

Application forms are available from the Assistant Secretary, ULCC, 20 Guilford Street, London WC1N 1DZ. Telephone: 01-405 8400, Ext. 341

Applications close two weeks after publication of advertisement.

(0208)

UNIVERSITY OF NEWCASTLE UPON TYNE
COMPUTING LABORATORY

TEMPORARY DEMONSTRATOR

Applications are invited for the temporary post of Demonstrator in the Computing Laboratory tenable from 1st August 1982, to 31st July 1983. Candidates in any area of specialisation will be considered. This post will be particularly attractive to a Ph.D. student who needs some extra time to complete his/her thesis.

Salary will be at an appropriate point on the Grade 1B (Bar) scale: £5,285-£7,700 per annum, according to age, qualifications and experience.

Further particulars may be obtained from the Deputy Registrar (F P) The University, 6 Kensington Terrace, Newcastle upon Tyne, NE1 7RU, to whom applications (2 copies) together with the names and addresses of three referees, should be submitted as soon as possible. Please quote reference CW.

0207

UNIVERSITY OF SUSSEX
School of Engineering and Applied Sciences

RESEARCH POSTS

(1) Research Fellow: To join an existing research team working on a successful ongoing project into the design and implementation of a multiple microprocessor distributed computing system. Applicants should have either a higher degree or equivalent experience and have a working knowledge of system software and the use of procedural languages. The appointment is for 18 months in the first instance and the salary will be on the scale £6,070-£10,575 pa (under review).

(2) Research Officer: To join a new research team to work on an SERC collaborative project with industry into the design and implementation of a broadband coaxial cable local area data network. The applicant should have a good honours degree and experience in the use of microprocessors and an interest in the writing of networking software. In addition, a knowledge of electronic circuits and high frequency techniques would be an advantage. The appointment is for 3 years and the applicant may register for a higher degree. The salary will be on the scale £5,285-£7,700 pa (under review).

Please write giving details of current employment and experience together with the names of 2 referees to: Professor R. L. Grimsdale, School of Engineering and Applied Sciences, University of Sussex, Falmer, Brighton, Sussex BN1 9QT.

(0199)

CONTRACTS

VAX/DATATRIEVE	(NOW)
VAX/FORTRAN (Sys. Prog.)	(NOW)
VAX/BASIC/FORTRAN	(NOW)
SNA VTAM IMS CICS SYS. PROGS.	(NOW)
DATABASE OR COMMUNICATIONS (IBM USEFUL) SENIOR CONSULTANTS	(Late Summer)
UNIVAC FORTRAN	(NOW)
MVS/PL1/DL1/JACKSON	(NOW)
DOS COBOL CICS	(July Aug Sept Start)
UNIVAC COBOL/IMS/TIP	(NOW)
UNIVAC COBOL	(NOW)
UNIVAC 90/30 COBOL	(NOW)
ICL 2904 TPS COBOL	(NOW)
ICL 2904 COBOL/JACKSON	(AUG)

MONTREAL ASSOCIATES SYSTEMS LTD.
98/100 HIGH ROAD, ILFORD, ESSEX IG1 1DS
01-553 2844 (4 lines) Emp. Agy.

(0258)

PEOPLE – A NEW CAREER! KINGSTON

Capitalise on your experience by joining an expanding computer/electronics recruitment consultancy. We need people with some experience interested in Consultancy, Support or Sales. Our company, established 8 years, provides full training in our proven systems.

Ideal town centre location offers easy parking, shopping. Highly lucrative financial package + scope for advancement – don't delay call us today! CA321.

AB EXECUTIVE (KINGSTON) LIMITED
01-549 6441

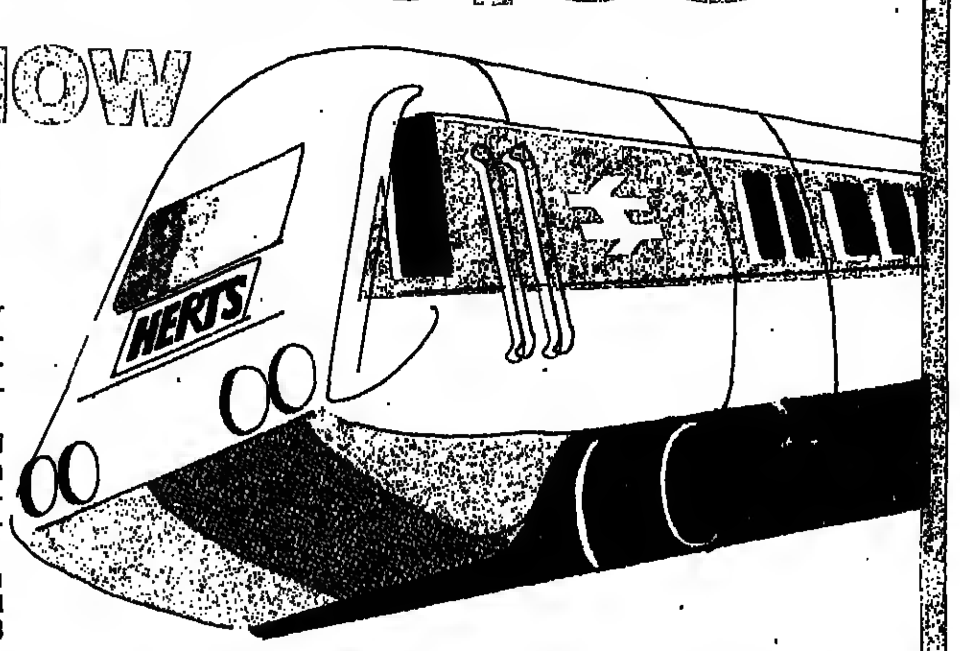
TECH AUTHORS
Europe

Data Comms. Hardware/Software Interface. Writing first time and proof on word processor. Background in Data Comms and Systems. Basic, Pascal and Fortran experience. Preparation of end user manual.

Long Europe contract. Very good rates. C. V. Urgent: Kennett Associates, Executive House, South Road, Templefields, Harlow, Essex. Tel: 0279 39595 Eves: 0279 33012.

(0266)

TRAIN in S.38
STRIKE NOW



Being shunted down the sidings?

Switch to the main line by coupling your experience and aspirations to this international manufacturing and research organisation already on route to further success.

The provision of extensive System 38 and RPG III training will enable you to steam ahead within the timetable of major development projects currently being undertaken.

If this signals your next move and you match the requirements below – call Gordon Thompson now quoting GT3483 for further information.

Analysts to £12.¼k

★ 3 yrs in IBM environment
★ Programming background
★ Feasibility to Implementation exp.
★ Effective communicator
★ Management potential

Anal/Prog to £10k

★ 1½ yrs + S34/RPG II
★ Good interpersonal skills
★ Flexible approach
★ Leadership qualities

Computer Search
01-404 0152

FIELD SERVICE
London – Home Counties
£10k + Car ++

Fabulous opportunity for Computer Engineers to join dynamic European manufacturer (Group Sales exceed £390M) who have just launched UK Subsidiary. High performance minis for both commercial and industrial users. A high basic salary, choice of car and other benefits are being offered to those seeking a new challenge and a chance to gain full training on high performance minis. Interested? Then call Keith Wallis NOW!

Altronics People (AGY)
01-543 4844

(0235)

UNIVERSITY OF ESSEX

Lecturer/ Senior Lecturer
in the Department of Electrical Engineering Science

Applications are invited for a post of Lecturer/Senior Lecturer (salary scale: Lecturer – £6,070 to £12,860, Senior Lecturer – £12,305 to £15,410) in the Department of Electrical Engineering Science for appointment from 1 January 1983, in the area of Traffic Analysis of Modern Communications Networks and Switching Systems. This post is being funded by British Telecoms for an initial period of five years. Candidates should have an honours degree and relevant experience in communications engineering, computer engineering, computer networks, or mathematics related to traffic and queueing problems. The lectureship would suit applicants with either a background in communications engineering and with good mathematical ability wishing to develop an interest in traffic engineering, or computer engineers with a good mathematical background related to queueing problems interested in applying their knowledge to communication networks. In exceptional circumstances, and for a candidate with proven ability and status in the traffic engineering field, the appointment at senior lecturer level will be considered.

The Department of Electrical Engineering Science specialises in Electronic Systems, with particular research interests in Telecommunication Systems, Industrial Electronics, Circuit Studies and CAD, Display Systems, Computer Systems and Microprocessor Applications, and Signal Processing.

Applications (nine copies), including a curriculum vitae and the names and addresses of two referees, should reach the Registrar (AG/160/L), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained, by 26 August.

(0246)

TRAINEE ANALYST

Honeywell Level 6
North London
from £5,500

We are seeking a computer science graduate with one year's experience of Honeywell Level 6 (OPSS) and knowledge of GCOS and TPS Screenwrite, possibly gained during an industrial placement. The trainee will work in a team with collective responsibility for projects from design to implementation.

Apply to Miss S. M. S. Gray, Assistant Staff Manager, Johnson Matthey PLC, 100 High Street, Southgate, London N14 6ET. Tel. 01-882 6111.

(0239)

UNIQUE ADVANCEMENT OPPORTUNITY
For a senior
ANALYST/PROGRAMMER

preferably in Databus, to join a small software house specialising in City transactions. Salary negotiable plus bonus.

Send C.V. to 18 Adelaide Close, Stanmore, Middlesex.

0218

BOX NUMBERS

Box number replies should be addressed to:

Box Number.....................
c/o Computer Weekly
Quadrant House
The Quadrant
Sutton, Surrey SM2 5AS

Office Automation Project

There are vacancies in Rutherford Appleton Laboratory Computing Division Database Section for specialists in office automation. The work involves

(a) analysis of requirements.
(b) design and specification of systems.
(c) liaison with manufacturers.
(d) programming.
(e) implementation of systems.

Suitable candidates should have a degree in a relevant subject and also have experience in at least some of the following: office automation, interactive systems, databases, data analysis, procedural analysis, Local Area Networks technology, machine independent software, software engineering, user requirement analysis.

Posts will be in the following grades:

Scientific Officer	£5,422-£7,399
Higher Scientific Officer	£6,840-£9,126
Research Associate	£7,507-£9,242
(fixed 3 year term)	currently under review

Some assistance with the expenses incurred in house sales/purchase may be available.

The Laboratory is a friendly community with its own restaurant and extensive sports facilities nearby. Benefits include a local transport service, generous holidays, and a non-contributory superannuation scheme.

Contact Recruitment Office, Personnel Group, Rutherford Appleton Laboratory, Chilton, Didcot, OXON OX11 0QX, or telephone Abingdon 21900 Ext. 510 quoting ref. VN 046.

Closing date for applications: 5th August 1982

serc Rutherford Appleton Laboratory

INTERNATIONAL AIRPORT

SAUDI ARABIA

RIYADH

ARABIAN DATA SYSTEMS recently advertised for Headquarter's Facility Management Operations Staff. Expansion of their contract now requires them to find the following:

PRODUCTION SERVICES MANAGER 43XX **£20,000**

Essentials are:
- At least 2 years' **IBM MVS OPERATIONS MANAGEMENT** experience with **DATA CONTROL** and **DATA ENTRY**.
- Knowledge of **TP NETWORK** facilities.

Preferable are:
- Supervision or involvement in **SYSTEMS PROGRAMMING**.
- Some knowledge of **COBOL**.

PRODUCTION CONTROLLER **£17,000**
- 5 years' minimum operating under **OS/VS1** and **MVS/JES2**.
- Proven **JCL** writing experience.
- 1 year minimum **DATA ENTRY** supervision.
- Machine **SCHEDULING** and **STAFF SUPERVISION**.
- Some **USER LIAISON** experience preferred.

OPS. SUPPORT/TP TECHNICIAN **£18,000**
- 2 years' minimum as **OPS ANALYST** under **MVS/JES 2** with 1st-class **JCL**.
- Must know **ACF/VTAM** messages and responses.
- Must have **INSTALLED AND CUSTOMISED IBM 3274/3276/3278/3287** devices.
- Proven **DISKSPACE** and **PROGRAM/PROCEDURE LIBRARY** management experience.
- Knowledge of **FDR, TMS, PANVALET.**

OPS. SUPPORT TECHNICIAN **£14,000**
- 6 years' minimum IBM operating with at least 2 years' **MVS/JES 2.**
- 1st Class **JCL** writing.
- Proven **DISKSPACE** and **LIBRARY** management experience.
- First-hand experience of **FDR, TMS, PANVALET.**

SALARIES ARE TAX FREE

Plus benefits including Bonus, Medical, Housing, Transport and Home Leave Flights, etc.

Contact Jenny Delrymple–Hey or Ian Murrey Weet on 01-493 2947 (day) or evenings, 8-9 p.m. on Beaconsfield (04946) 4579 or Milton Keynes (0908) 563415 respectively or write quoting Ref. 9920 to: (0218)

DALROTH & PARTNERS LTD. 4 HALF MOON STREET, LONDON, W.1

Distributed Processing Planner Arabian Gulf c£17k
The successful applicant should have approx, 6 years computer/network operations support OR computer physical facilities planning experience, including 2 years with IBM's large mainframe computers. Ref: KS684/CW.

Senior Operator Glocs. £neg
This opportunity will be attractive to a dynamic operations person with 2-3 years sound VME/B (ideally latest VME 2900 release) coupled with some GEC II experience. Ref: KS637/CW.

IBM DOS/VSE Operator Berks/Herts £5.6k
Our client is running an efficient IBM 4341 installation with order processing soon to go on-line. Their requirement is for an operator with approximately 9-18 months DOS/VS/E experience. 2 shift system. Ref: KS663/CW.

Contact Kay on 01-836 8411 regarding the above positions.

DOS Operator Middx. c£6k
International company seeking IBM operator with some knowledge of MVS. 2 shift system only. Ref: MM651/CW.

Ops Controller Middx. c.£8k
Prime site seeks candidate with good mini knowledge. At least 2 years required with networking experience. A wide range of responsibilities including supervision of 1 other operator. No shifts. Ref: MM680/CW.

PDP Operator Middx. £6k+
Bright young applicant required for rapidly expanding RSX11M site. Excellent promotional prospects. Ref: MM676/CW.

Contact Madeleine on 01-836 8411 regarding the above positions.

CONTRACTS

IBM System 3 15D – City
IBM System 34 – City
IBM OS/VS1 – Midlands
PDP RSTS/E – City

Contact Steve on 01-836 8411 regarding the above contracts.

CoOperators

VIJ House St Martin's Lane London WC2N 4JB

01-836 8411

(0403)

Contract Professionals

The Agency Alternative

As a contract professional you are obviously aware that many companies rely very heavily upon contract staff, perhaps in Data Processing and Computing more than any other field.

Previously – the only major recognised link between companies seeking contract personnel and the contractor offering technical or intellectual skills and expertise was the agency.

Now – there is a new channel of communication enabling you to make direct contact with the companies looking for the specific skills that you can provide.

The Irex Clearing House is a membership network, a division of Ideas and Resource Exchange Ltd, specifically devised to effect introductions between members who have compatible needs and interests.

We store the detailed information that you provide about your services and capabilities for immediate recall and matching against user members' requirements.

Over a thousand of the top industrial and commercial concerns in the UK have the use of the Irex computer to search through its databanks to find members who are offering the services they require.

Advantages of the Clearing House:-
- You can agree your own terms of contract directly with the user, free from third party involvement or fees.
- Every single member requirement for which you are qualified will be sent to you.
- You are free to contact any member company seeking your skills.
- Your details are never sent to any user until you have given your permission, so the service is completely confidential.
- You are assured of being accurately presented to your chosen users because you write your own profile.
- The service is extremely fast.

Currently, our members have urgent requirements in many areas of Data Processing and Computing. We also operate in a number of other disciplines including Finance and Accountancy, Engineering and Management Consultancy.

For further information about the Irex organisation and for details of membership of the Clearing House, please call John Edwards on **01-261 1543** (24 hours) or send him the completed coupon below.

NAME
ADDRESS

TEL. NO: DAYTIME EVENINGS
JOB TITLE

CW

irex Irex Clearing House, Ideas & Resource Exchange Ltd., Snow House, 103 Southwark Street, London SE1 0JF.

(0238)

irex

CONTRACTORS

Register now for your next assignment

URGENT REQUIREMENTS

IBM

IBM 4300 DOS/VSE COBOL CICS DL/1	ANALYST/PROGRAMMER
IBM SYSTEM 34 RPG2	ANALYST/PROGRAMMERS
IBM SYSTEM 3 RPG	PROGRAMMERS
IBM 370 DOS/VS1 CICS COBOL	PROGRAMMERS
IBM IMS DB/DC ADF COBOL	PROGRAMMERS
IBM OS/VS1 COBOL	PROGRAMMERS
IBM SYSTEM 34 RPG2 MAAPICS	PROGRAMMERS
IBM MVS COBOL CICS DL/1	ANALYST/PROGRAMMERS
IBM SYSTEM 36 RPG3	ANALYST/PROGRAMMERS
IBM ADABAS NATURAL + PL/1	ANALYST/PROGRAMMERS
ANY IBM COBOL IMS	ALL LEVELS

ICL

ICL ME 29 RANGE COBOL TPS TME	ANALYST/PROGRAMMERS
ICL ME 29 RANGE COBOL OMAC	ANALYST/PROGRAMMERS
ICL ME 29 COBOL APPS MANAGER	PROGRAMMERS
ICL 2900 OME COBOL IOMS TPS	ANALYST/PROGRAMMERS
ICL 29/66 OME/GEORGE 3 COBOL	ANALYST/PROGRAMMERS
ICL ALL LEVELS	ANALYSTS/PROGRAMMERS

OTHERS

DEC PDP 11/70 RSTS/E BASIC +/2	PROGRAMMERS
INTEL 8086/POP 11/70 CORAL 66+	ASSEMBLER PROGRAMMERS
BURROUGHS 6500 MOP OMS2 GEMCOS	ALL LEVELS
MOTOROLA 68000 ASSEMBLER	PROGRAMMER/DESIGNERS
MOTOROLA 68000 PASCAL	PROGRAMMERS/ANALYSTS
HONEYWELL OP66/66 GCOS OM4 COBOL	PROGRAMMERS
DATA GENERAL AOS INFOS COBOL	ANALYST/PROGRAMMERS
YAX VMS	SYSTEMS PROGRAMMERS
DEC PDP 11/70 RT11 OR RSX11 FOR TRAN/MACRO	ANALYST/PROGRAMMERS

OVERSEAS

PL/1 COBOL TSO/SPF	PROGRAMMERS/ANALYSTS
MARK 4 PL/1 JCL CRT	ANALYST/PROGRAMMERS
PL/1 IMS DB/DC JCL TSO	ANALYST/PROGRAMMERS
IMS DB/DC OS/PL/1 TOP-DOWN ANALYSIS	SYSTEMS ANALYSTS

HOLLAND

ANALYST/PROGRAMMERS FORTRAN CALCOM/GRAPHICS EXPERIENCE NEEDED.

A Computer Search contract starts by calling Kelly on Hemel Hempstead (0442) 40761 (24 hour answer service).

Computer Search (Contracts) Ltd., Hamilton House, Marlowes, Hemel Hempstead, Herts. HP1 1BB

(0442) 40761

Computer Search Contracts

(0200)

THERE IS A WORLD OF DIFFERENCE IN A CAREER WITH

So why not attend our

Informal Interviews at Cafe Royal Regent Street London

from 12.00 noon till 9.00 p.m. on

MONDAY 19th JULY 1982

Systems Designers Limited is a leading international computer systems consultancy specialising in the application of mini and micro computers to high technology real-time systems, together with the development of pertinent languages and system development tools.
We currently require Software and Systems Engineers with good academic background and extensive experience of mini or micro computers in technical applications. Flexibility and adaptability are prime requisites. Variety of work and excellent career prospects are the rewards and opportunities exist for work in the UK, Europe and USA.

Principal areas of interest include:

Tandem Non-stop Financial Systems
Industrial Procese Control **Videotex Systems**
Databese Design **Advanced Software Technology**
Real-time Defence **Telecommunications**

If you cannot attend, but the prospects interest you, please contact Bill Hockey, Operations Director (ask the operator for Freefone 3179) or write to him at:

SYSTEMS DESIGNERS LIMITED

Systems House, 105 Fleet Road, Fleet, Hampshire GU13 8NZ

(0219)

IBM System/38

Programmers and Analysts

for client support in the UK and Europe
Salaries to £13,000+benefits

Datasense, a software house specialising in IBM equipment, need additional staff to meet continued business expansion. If you are an enthusiastic, self-motivated professional, we can offer varied and challenging assignments both in this country and overseas. Our work ranges from software package development to the implementation of complete custom-built systems.

As the first UK software house to install an IBM System/38, our company has attained an international reputation as System/38 experts.

PROGRAMMERS – with a minimum of two years experience using RPG, preferably in an interactive environment.

ANALYSTS – with a minimum of four years experience, and ideally a knowledge of Database systems.

For further information please contact:
Dave Miller or Tony Rundle, Datasense Limited
Blue Line House, Elays Estate, Angel Road,
London N18 3BJ
Telephone 01-803 8618

datasense

Systems Software Designers

Network Management Software

£8,000-£16,000 + — Bracknell

We need designers and implementors to further develop our NETWORK MANAGEMENT SOFTWARE.

Working with a wide range of ICL systems and OEM machines, you would be part of the team developing this major component in ICL's offerings as a total network supplier.

If you have a proven track record as a designer or implementor in the network management field then you could be the person we are looking for.

The salaries will be in the range of £8,000 to £16,000 (more for outstanding applicants) together with major company benefits including assistance with re-location and genuine career development opportunities.

If you feel confident of your ability in this field then telephone Mick Wright or Margaret Hollingsworth on 0344 24842 or send your C.V. to Margaret Hollingsworth at ICL, Lovelace Road, Bracknell, Berkshire, RG12 4SN.

ICL International Computers

(0200)

PROCESS CONTROL

Participate in the growth of a new specialised Software House. System Designers, Analysts and Programmers with experience of industrial computer control systems required. Write with CV to:
Willis Automation Consultants
12 Jesse Close, Yateley, Camberley, Surrey GU17 7AH

(0256)

BOX NUMBERS

Box number replies should be addressed to:

Box Number.....

c/o Computer Weekly
Quadrant House
The Quadrant
Sutton, Surrey SM2 5AB

SOUTH WEST UNIVERSITIES REGIONAL COMPUTER CENTRE UNIVERSITY OF BATH

SOFTWARE DEVELOPMENT

Two programmers are required to join a small team developing a new compiler and related software for a major manufacturer. Experience of system software development (especially compiler internals) and a good knowledge of Pascal and/or Algol 68 would be a definite advantage, but equally important are enthusiasm, initiative and the ability to learn quickly.

Salary scales (under review):
IB (£5,285-£8,925), IA (£6,070-£10,575)

The appointments will be for an initial fixed term of two years.

Write or 'phone for further details and application form to:

Personnel Office, Bath University, BATH BA2 7AY (Bath 61244) ext 703, quoting ref no: 82/72. Closing date: 2.8.82.

0220

Freelancers . . .

. . . in the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Moore, to discuss a variety of interesting and rewarding assignments throughout the UK and overseas.

P-E Computer Services Limited
Winchester House, Fountain Street, Manchester M2 2EF. Telephone: 061-228 2776

PE

(0018)

CONTRACTS

★IBM	Analyst/Programmer	CICS, PL1, IMS
	Analyst/Programmer	CICS, ASSEMBLER
	Senior Programmer	CICS, PL1
	Senior Programmer	CICS, COBOL, DLI
	Programmer	OS, COBOL
	Programmer	DOS, COBOL, DLI, VSAM
★IBM SYS.34	Programmer	RPGII
	Programmer	DPPX, COBOL
★B6800 & 6900	Programmer	COBOL
★HP3000	Programmer	COBOL
★DATA GENERAL	Programmer	AOS, INFOS2, COBOL

If you are on contract or are seriously considering taking up contract work, don't delay, forward a c.v. or contact JACKIE ROBBINS today.

(0010)

FORCE 8 computer services
8 Mint Walk Croydon 01-680 3761

link

Reliable Software Support starts with a call to Link

Formed two years ago LINK ASSOCIATES has built a reputation for effective and professional service in the areas of:

- ★ Contract Hire
- ★ Managed Contract Facility
- ★ Independent Consultancy

We have fulfilled a wide range of technical and commercial assignments for our clients, all of whom would give a good reference for the service that we supply.

We have a self imposed Code of Practice which is strictly adhered to for the protection of our clients, our permanent consultants and our contract staff.

If you have a Software problem on mainframe, mini or micro, your solution starts by contacting:—
Link Associates Limited
24a High Street, Chesham, Bucks. (0494) 784922

IF YOU'RE LOOKING FOR A FRESH CHALLENGE AND THE BEST PACKAGE DEAL POSSIBLE, 'PHONE US TODAY.

A retail credit selling organisation with an impressive growth record is seeking Systems Analysts for their IBM 4341 Model 2 installation.

Package deal includes salaries up to £11,000 p.a., pension scheme and an attractive discount purchasing facility.

IBM 4341 Model 2 ■ 2 laser printers ■ 6000 million characters of disc storage ■ 100 VDU's ■ VM and DOS/VSE operating systems ■ advanced database applications ■ Central Manchester location.

For more information, telephone John Bellamy, Insight Marketing and Personnel Consultants Ltd, on

061-236 7026
(24 HOUR SERVICE)

061-969 3489
(EVENINGS & WEEKENDS)

(0202)

Two Years IBM Software?

Earn up to £19,000 (tax free) in the Arabian Gulf

Is your MVS Assembler good enough to offer you the chance to gain experience on IBM's latest 3081's with a network of over 1500 terminals?

Our Client's constant upgrading and re-evaluation of hardware and software is not restricted by financial constraints. Sophisticated training both on site and overseas will be provided where necessary, to keep you abreast of these developments.

Phone Peter Madams now on 01-723 4053 (24 hrs.) to discuss the above opportunities and the tremendous benefits package offered by our Client.

Comcap Resources Limited
26 Chilworth Street,
London W2 6DT.

(0225)

Comcap Resources Limited

SYSTEMS PROGRAMMING
Cambridgeshire

Our client, a very successful British company using IBM 4300's under DOS/VSE with CICS and DL/1, wishes to recruit additional systems programming staff.

We invite applications for vacancies at the following levels:-

SYSTEMS PROGRAMMERS ***c£10,000***

Candidates should have about 2 years systems programming experience in a DOS/VS, CICS environment or have considerable practical experience of VM. (CW/8229).

JUNIOR SYSTEMS PROGRAMMERS ***c£8,000***

These vacancies should appeal to young programmers wishing to develop their career in systems programming.

A sound background of about 3 years programming in an IBM mainframe installation is required and this should include about 12 months using ASSEMBLER. (CW/8230).

The general conditions of employment and promotion prospects are first class and excellent starting salaries will be negotiated with successful candidates. Generous relocation package, which includes an interest free bridging loan, is available in appropriate cases.

Contact Cathy Scott quoting the appropriate reference.

Ivor Norton Management Services Ltd.
RECRUITMENT CONSULTANTS
P.O. Box 63, Copthall Tower House, Harrogate, HG1 1TS.
Telephone Harrogate (0423) 55311
24 HOUR ANSWERING SERVICE

CONTRACT
PROGRAMMERS AND ANALYSTS

Ensure that you are offered the best jobs on the contract market by having your profile entered on to our database.

We supply staff to leading companies in the UK and Worldwide.

Complete the coupon below or telephone Richard Netts at

DATASCENE INTERNATIONAL
SCEPTRE HOUSE
169/173 REGENT STREET
LONDON W1R 7FB
01-439 1856 (24 Hours)

NAME: .....
ADDRESS: .....
.....
TEL: .....(HOME).....(OFFICE)
MAJOR EXPERIENCE: .....(HARDWARE)
.....(SOFTWARE)

(0232)

Datascene International Limited
Sceptre House 169/173 Regent Street London W1R 7FB. Telex: 25851

datascene
London & Brussels
01-439 7871
24 hour answer phone

BUICK COMPUTER SERVICES

Recruitment Division 72 Rochester Row
Victoria, London SW1P 1JU

Tel: 01-834 5923 (Daytime)
01-834 0061 (24 hours)

DP RECRUITMENT CONSULTANT
We are seeking an ambitious and self-motivated Consultant with a professional approach to DP recruitment activities for contract or permanent personnel. You will display a successful track record within recruitment consultancy, and in return, we will offer higher personal rewards based on achievement, coupled with greater scope and responsibility. Ref: C9200

COMMUNICATIONS CONSULTANT £16,000 + car
This leading software organisation requires a Consultant with up to a decade of experience in network planning, dimension and equipping, and message switching, preferably System X25. The successful applicant should also have a good working knowledge of the design and implementation of data communications, software, and associated security. Ref: C9210

TECHNICAL SUPPORT MANAGER £15,000
Our client, based in London, is a well-known commercial organisation with a large investment in the development of online systems. This company is currently seeking a Technical Support Manager to take charge of a small team of specialists, whose functions include software programming, network and database control. The successful applicant must have a CICS or SHADOW background with systems programming using BASIC ASSEMBLER language plus any high level language experience. This position would ideally suit someone wishing to take the next step into management, and at the same time maintaining technical competence. Ref: C9192

SENIOR SYSTEMS PROGRAMMER £15,000
This large manufacturing company situated in the London area requires a Systems Programmer with BAL and solid OS/VS1 or MVS experience. The successful applicant will take charge of a team of three. Excellent career prospects in a progressive and expanding environment. Ref: C9220

SYSTEMS INSTRUCTOR HERTS to £15,000
Our client is continuing to expand its business, and as a consequence has a fast-growing data processing complex. In order to maintain the high standards of its internal training facilities, the company needs a talented instructor with at least seven years' systems and COBOL programming experience, together with a working knowledge of large IBM systems using IMS. Ref: C9206

RPG 2/3 PROGRAMMERS to SYSTEMS CONSULTANTS to £15,000
A number of our clients situated in London/Home Counties and South East England are seeking Programmers and Analysts with 2-3 years' RPG experience, preferably on System/34 and/or System/38 equipment, capable of working on their own initiative. Applications include the specification, design and implementation of a wide variety of commercial systems. Ref: B9187

ANALYST/PROGRAMMER HERTS to £14,300
This large organisation is currently seeking an Analyst/Programmer with a minimum of 3 years' COBOL, CICS together with 12 months' design experience, preferably in a DOS/VS environment, using database facilities. There is considerable scope to progress in this rapidly expanding business. Ref: C9201

ANALYSTS to PROJECT LEADER level to £14,000 + benefits
Three of our clients situated in Middlesex, London and Kent Coast, with commitments to developing online systems, are seeking development staff at all levels. The successful applicants will have at least 2 years' programming experience in COBOL, or PL1 together with a proven track record in systems development in insurance, Banking or other financial applications. A knowledge of CICS would be an added advantage. Benefits include bonus and profit sharing. Ref: A8041

SENIOR SYSTEMS ANALYST £13,500 + profit share
This London-based financial organisation needs someone with at least 2 years' design experience to take an important role in the development of their applications. Previous online experience is essential, together with a good understanding of database concepts. A knowledge of CICS and/or IDMS would be idyllic! Ref: C9081

BUSINESS ANALYST MIDDX £ Market+
Our client is a major computer user, and is currently creating a new division to handle the marketing of new products. As a consequence, the company needs a Business Analyst with at least 2 years' sound systems experience coupled with a programming background. This is an ideal opportunity to take a lead in development of a wide range of applications using a variety of software aids and hardware tools. Ref: C9085

RESEARCH ANALYST to £13,500
Our client is seeking someone with specialist skills to undertake a consultancy role in the investigation of hardware and software facilities, and assess its suitability to the Group. The job entails a wide range of activities including communication with suppliers and users, preparing findings and recommendations, pre- and post-installation of products, education and support. The successful applicant must possess a wide variety of technical skills; together with a broad perspective and good business sense. Ref: C9216

SHIFT CONTROLLER MIDDX £13,000
This large organisation is seeking someone with extensive operational and supervisory experience to take charge of one of their shifts running under MVS. Ref: A9228

CHIEF PROGRAMMER SUSSEX COAST c£12,000
This company requires someone with a strong IBM COBOL and/or ASSEMBLER experience to take charge of their team of Programmers in a CICS/DL1 environment. This position offers great opportunities, accompanied by excellent salary and fringe benefits. Ref: A9051

PROGRAMMERS to SYSTEMS ANALYSTS SUSSEX to £12,000
This Crawley-based company offers excellent prospects to those COBOL Programmers and Systems Analysts who wish to enhance their technical skills. Excellent fringe benefits. Ref: A9045

ANALYSTS & PROGRAMMERS HANTS to £12,000+
This major company is undergoing development of new online systems and is seeking Analysts with at least 12 months in system design, preferably with an insurance or financial background. Vacancies also exist for Programmers with 2 years' COBOL experience. Benefits include profit sharing and annual bonus. Excellent prospects. Ref: C9185

TEAM LEADER HERTS £11,500
Our client, a well-known manufacturing organisation, requires someone with supervisory skills to take charge of their small team of Analysts and Programmers in a DME 2 environment. The successful candidate must have a sound systems and COBOL programming background, together with a good understanding of ICL 1900 or 2903/2904. Ref: C9146

PL1 and COBOL PROGRAMMERS to £11,500 + benefits
A number of our clients situated in London, the Home Counties, and S.E. England, need Programmers with a minimum of 2 years' PL1 or COBOL experience for the development of realtime systems. A knowledge of CICS and DL1 would be an advantage. One of our clients is also seeking a Junior Programmer with at least 9 months' commercial experience in PL1, where there is a prospect of moving later into analysis. Ref: B9102

DATABASE SPECIALIST LONDON to £11,500
Our client is seeking to complement its Technical Support Team with a specialist responsible for database design, the monitoring of program development to ensure their efficient use, and performance tuning of operational systems. This successful applicant will have sound experience of database design, and a good understanding of CICS in an MVS environment is desirable. Ref: C9217

TEAM LEADER c£11,000 + Bonus
PROGRAMMER c£9,000 + Bonus
Our clients, an international leisure company situated in London, are seeking a Team Leader with a minimum of 3 years' IBM COBOL experience and a good working knowledge of CICS, to lead a team of 4 Programmers, also a Programmer with a minimum of 18 months' IBM COBOL preferably with CICS experience. Both positions offer long term security and excellent salaries, conditions and benefits. Ref: B9079

CHIEF PROGRAMMER £11,000 (early review)
Our clients, a large commercial industry in Middlesex, are seeking someone with several years' IBM COBOL experience ideally gained in an OS environment. Knowledge of CICS, TOTAL and ROSCOE would be useful, together with good supervisory skills. Among the many excellent benefits offered are free BUPA, relocation where applicable. Ref: A9092

SYSTEMS ENGINEERS LONDON/CHESHIRE c£11,000
This leading computer organisation requires Software Engineers with at least three years' practical experience of installing, testing and debugging equipment and systems. An appreciation of mini/micro computer systems/peripherals, and a knowledge of industrial interface equipment for digital and analogue signals, backed up by an HNC in Electronic Engineering is desirable. The successful applicants will be involved in selection, configuration through to installation of hardware for industrial realtime computer systems. Ref: C9304

SYSTEMS INSTRUCTORS LONDON £11,000
This well-known organisation, highly skilled in the training of all levels of development personnel, is seeking two talented Analysts with communicative skills, to impart the knowledge, techniques and disciplines of Systems Analysis. A programming background is also an important attribute for this challenging and responsible position. Ref: C9078

ANALYST/PROGRAMMERS MIDDX £ Market
This company is in the process of creating a new section to handle the development of a wide variety of bespoke systems. Computer professionals are needed with 2-3 years' COBOL, BAL or PL1, together with some systems experience where this has involved a fair degree of user contact. Excellent prospects. Ref: C9212

PROGRAMMERS UK & ABROAD to £11,000+
Major Software House has a requirement for Programmers with 3 years' COBOL experience to work on various client projects. The successful applicants must have a good understanding of ICL 1900/2900 system software, or HONEYWELL GCOS, TOS, OMIV. Generous overseas allowances given where applicable. Ref: C9103

SYSTEMS DESIGNERS LONDON to £11,000
This major Software House is currently seeking Systems Designers with HEWLETT PACKARD 3000 experience, to specify and develop commercial systems for various clients. An ideal opportunity to consolidate your experience and widen your hardware/software base with a progressive organisation. Ref: C9111

FORTRAN SPECIALISTS LONDON/HOME COUNTIES to c£11,000
Programmers are required to join existing development teams to work on a variety of applications including scientific research, engineering and commercial projects. Good fringe benefits. Ref: C9211

PROGRAMMERS AND ANALYSTS £8,000-£11,000
Our client is currently looking for several Programmers and Analysts with a sound COBOL programming background, preferably using BURROUGHS equipment. The successful applicants will be involved in the development of a number of commercial online applications using the latest equipment and systems software. Ref: C9215

LECTURER MIDDX £10,500
This major manufacturing company needs someone with experience in FORTRAN and/or CORAL to take responsibility for teaching their graduates within the Group, using DEC/VAX and other equipment. The successful candidate will probably be educated to HNC or HND level. Excellent scope and prospects for this demanding position. Ref: C9189

PROGRAMMER/ANALYSTS to £10,500 + Profit Share
Our client based in London, is seeking two Programmers with at least 2 years' solid COBOL experience to work on the development of online/database financial applications. These positions would ideally suit those wishing to put their theoretical systems knowledge into practical use. Ref: C9198

ICL PROGRAMMERS SUSSEX to £10,500
Our client, based in Crawley, is expanding its development teams, and as a consequence need Programmers with at least 18 months' ICL COBOL experience. A knowledge of VME/B or VME/K would be useful. Ref: A9186

ANALYST/PROGRAMMER MIDDX/LONDON to £10,500
This large organisation requires someone with an IBM COBOL programming background to assist in the development of their online systems. Systems software training will be given, where necessary, in a progressive environment. Ref: C9108

JUNIOR SYSTEMS PROGRAMMER £10,500
Our client needs a Junior Systems Programmer with 12 months' experience of DOS/VSE together with some knowledge of BAL. A good understanding of CICS would be useful, as the successful applicant will initially assist in looking after the CICS system, and VM development. This position would ideally suit a technically minded person who has moved through Operations, and is looking for further career advancement. Ref: C9136

Tel. 01-834 5923 (Daytime)
01-834 0061 (24 hours)
or call evenings & weekends:
REF. A: 01-840 0129
REF B: 01-794 5937
REF C: 01-942 1178

BCS

The above vacancies are only a token selection taken from our current files, and we are always pleased to hear from computer professionals wishing to further their career objectives.

BUICK COMPUTER SERVICES

Recruitment Division 72 Rochester Row
Victoria, London SW1P 1JU

Tel: 01-834 5923 (Daytime)
01-834 0061 (24 hours)

PROGRAMMERS ESSEX/LONDON to £10,400 + mortgage
This large financial organisation is undergoing rapid development of its data processing facilities, and as a consequence needs additional Programmers. A minimum of 2 years' COBOL and/or ASSEMBLER in a DOS/VS environment is required for these positions. Ref: A9192

SENIOR SYSTEMS ANALYST KENT £10,000 + fringe.
This industrial company situated on the Kent coast, requires someone with good systems experience together with a working knowledge of Database/Data Communications in an IBM environment to develop various new commercial applications. Ref: A9044

PROGRAMMER LONDON £10,000 + mortgage
A leading financial group based in North London are wishing to recruit a further Programmer to meet the needs of their expanding installation. A minimum of 2 years' PL1 experience is essential together with working knowledge of CICS. An excellent salary and fringe benefits apply including mortgage, monetary loans, season ticket loan, etc. Ref: B9195

ANALYST/PROGRAMMER BERKS £10,000
Our client seeks an Analyst/Programmer with 3 years' COBOL programming and system design experience for minicomputers using database management techniques. Familiarity with HEWLETT PACKARD 3000 series would be an advantage. This position offers long-term security, an excellent career path and excellent benefits. Ref: B9181

ANALYST/PROGRAMMERS SUSSEX/KENT c£10,000
A number of companies in Sussex and Kent need Analyst/Programmers with COBOL or RPG2/3 experience, to work on a wide variety of applications. Opportunities also exist to work with the latest equipment, i.e. IBM 4300 and System/38 etc. Ref: A9053

ICL (ANALYST) PROGRAMMERS HERTS/MIDOX. to £10,000
This famous manufacturing company requires Programmers and Analyst/Programmers to take a leading role in the development of a number of small to medium sized commercial systems. Applicants must have about 18 months' COBOL, together with a working knowledge of ICL 1900 or 2900 system software. Ref: A9207

SENIOR PROGRAMMER SOUTH COAST £9,500
We have been asked to assist in the recruitment of a Senior Programmer with a minimum of 3 years' COBOL experience and an IBM background. Preferences will be given to applicants who have a working knowledge of CICS/DL1. This position holds the responsibility for four other Programmers, therefore an ability to lead a team is desirable. Excellent benefits apply, including free BUPA and relocation, where applicable. Ref: 98958

SYSTEMS ANALYST KENT COAST c£9,300 + benefits
This company needs an Analyst preferably with a COBOL programming background, to take an important role in the development of their financial applications. The company offers superb fringe benefits which include cheap mortgage facilities. Ref: A9045

PROGRAMMER BERKS c£9,000
This well known electronics company is developing a number of realtime commercial systems, and needs an additional Programmer with 18 months' IBM COBOL experience to meet these requirements. A knowledge of CICS would be an advantage, but training will be given to the successful applicant Ref: A9222

H.P. PROGRAMMERS SURREY/BUCKS/BERKS/MIDOX. c£9,000
Our clients, well known consumer industrial groups and software houses, are seeking COBOL Programmers with around two years' experience, ideally in interactive HEWLETT PACKARD 3000 or similar mini-computer systems. These positions offer an excellent career path, coupled with good fringe benefits. Ref: B9180

BAL PROGRAMMER KENT £8,000
Our client requires a Programmer with about 12 months' ASSEMBLER experience to assist in the development of various commercial applications. There is an opportunity to gain experience in a high level language together with training in systems analysis. Attractive benefits. Ref: A9037

ICL PROGRAMMER MIDDX £8,000
Our client needs a Programmer with at least 18 months' COBOL experience in a GEORGE 2 or DME environment. An opportunity exists to also gain experience at design level. Ref: A9228

FIELD SERVICE ENGINEERS c£8,000 + car
This rapidly expanding company needs Engineers with 3 years' experience in the servicing of minis, micros and peripherals, at sites in Hampshire and Yorkshire. The ability to liaise at all levels is essential for these positions. Ref: C9028

JUNIOR PROGRAMMER MIDOX. £7,000+
Our clients, an international publishing company, are seeking someone with 6-12 months' experience of IBM COBOL, to join their friendly young team. Training in CICS will be given. A flexi-time system is in operation and many other fringe benefits apply. Ref: BB18D

OPERATIONS

DOS OPERATIONS MIDOX. £8,750 + benefits
A large international organisation are seeking two Operators with a minimum of 2 years' DOS/VSE, CICS experience to work on their IBM 4331 range. A 2-shift system is in operation. The company offers an excellent salary, free BUPA, LVs and good promotional prospects. Ref: A8040

OPERATIONS SUPERVISOR N.W. ENGLAND £8,500
A well-known manufacturing company is seeking someone with at least four years' HONEYWELL Operations experience, preferably with DPS 100. The successful applicant must be able to communicate at all levels of D.P. and line management. Excellent working conditions and benefits apply, together with relocation expenses where applicable. Ref: B9240

BURROUGHS OPERATORS LONDON/SURREY to £7,800
These companies need Operators with a minimum of 6 months' experience on B6700, B6900 or B8900 equipment, to work a 2-shift system, where there are excellent prospects. Ref: C9159

SENIOR OPERATOR BEOS c£7,500
A minimum of 18 months' experience of MVS/JES2 is required to work on IBM 3031 and 4341 range. An excellent career structure in an ultra-modern environment coupled with many fringe benefits are offered. Ref: B9161

DEC OPERATOR LONDON £7,200+benefits
Our client, a leading international financial organisation needs an Operator with a minimum of 12 months' AIMS and/or RSTS. A knowledge of SWIFT would be an advantage. The site operates a 2-shift system, and the numerous benefits offered include a subsidised MORTGAGE facilities. Ref: B9241

OEC OPERATORS SURREY c£7,000 + fringe
Large organisation in Surrey is seeking an Operator with at least 18 months' RSTS/E experience (will consider RSX) for small department on 2 shifts. Ref: B9182

DOS OPERATOR LONDON c£7,000
This busy installation is seeking an Operator with a minimum of 18 months' DOS/VS experience to work in a 2-shift environment. This position would ideally suit someone wishing to move quickly to a senior position with more responsibility. Ref: C9152

OPERATOR ESSEX to £7,000
A well-known manufacturing company are seeking an Operator with approximately 2 years' experience of DOS/VSE for their IBM installation. A 2-shift system is worked, and the position is progressive for the right applicant. An above average salary together with an excellent career path is guaranteed. Ref: A9150

OS/VS1 OPERATOR MIDOX. £6,500
Required for busy installation running under 3 shifts. This position would ideally suit someone with about 18 months' good technical experience in order to liaise with TSG. Good prospects and benefits attributed to the position. Ref: C9104

ICL OPERATORS LONDON £6,500
A leading Banking organisation require Operators with around 12 months' VME/B and/or DME experience. The site comprises of 2 x 2960 range. The positions offer long term security and a structured career path leading to Programming. Ref: B9059.

OPERATOR LONDON c£6,300
This position would suit an ICL 2904 Operator who would like to be trained on the fast expanding DEC(VAX) System. The site is based in the City, and will soon be operating on a 2-shift basis. Many good opportunities exist for a career minded person. Ref: B9183

JUNIOR OPERATOR LONDON c£5,500
This progressive site requires someone with at least 6 months' DOS/VS experience to work within a 2-shift system. Excellent prospects. Ref: B9199

PROGRAMMING CONTRACTS:

PL1, CICS, MVS designers	U.K.	3-12 months
PL1, CICS	U.K., Europe & U.S.A.	3-12 months
RPG2	U.K. & U.S.A.	3-12 months (ren.)
RPG3	U.K. & U.S.A.	3-12 months (ren.)
COBOL, OMB2 & GEMCOS	U.K.	3-9 months
BASIC (CPM)	HOLLAND	3-12 months (ren.)
ICL COBOL	U.K. & EUROPE	3-12 months
COBOL, CICS	U.K., EUROPE & U.S.A.	3-12 months (ren.)
PL1 or COBOL, CICS for IBM 8100	U.K.	6 months

OPERATING CONTRACTS:

HONEYWELL (various)	U.K.	3 months

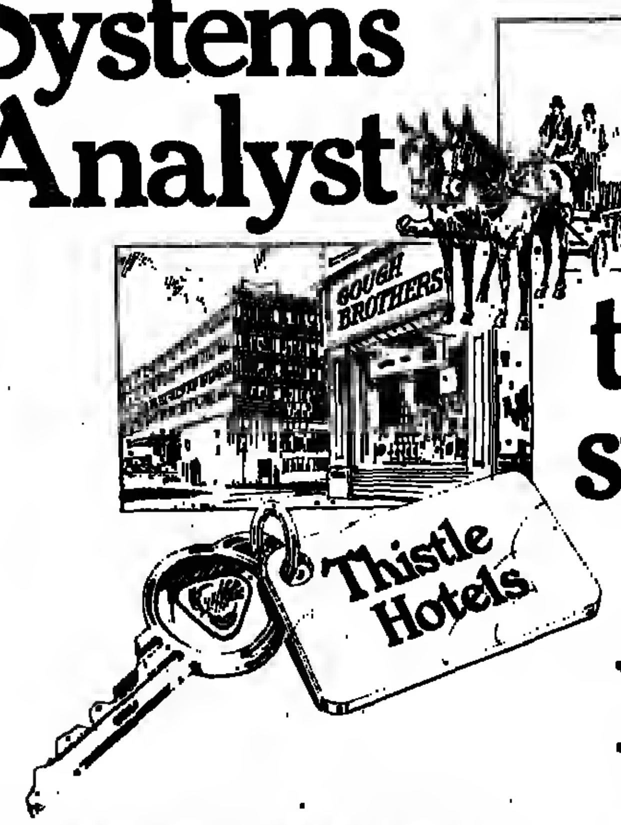
Tel. 01-834 5923 (Daytime)
01-834 0061 (24-hours)
Or call evenings and weekends
REF. A: 01-840 0129
REF. B: 01-794 5937
REF. C: 01-942 1178

BCS

The above vacancies are only a token selection taken from our current files, and we are always pleased to hear from computer professionals wishing to further their career objectives.

(0080)

For a Professional Systems Analyst



the scale is staggering and the prospects immense

With some companies it's easy to outgrow your environment and find your progress grinding to a halt. But at Scottish & Newcastle Breweries we have the room and the prospects for you to realise your ambitions to the full.

As one of UK's leading companies we operate on an extremely large scale — employing over 24,000 people and generating an annual group turnover exceeding £600 million.

Right now we are looking for professional Systems Analysts with upwards of four years' experience who have the capacity and flexibility to gain a wide understanding of our diverse organisation.

As a Systems Analyst with us in Edinburgh you will be involved in the design and development of DP and office systems to answer the business needs of users throughout the Company. You will control and motivate your team in order to ensure the most effective use of analysis and programming resources.

Linked computer centres at Edinburgh and Newcastle with IBM 370/158 and 4341 Processors run MVS, TSO, CICS and IMS, serving a national network of 400 terminals and mini processors. Future developments will include the installation in late 1983 of an IBM 3083.

Our systems division provides a highly stimulating working environment where ability and ambition are quickly recognised and rewarded. And, unlike many organisations, career progression can extend well beyond the systems function so career prospects are virtually unlimited.

Immediate rewards include a commencing salary of up to £11,000 (current salary scale ranges up to £14,100) with a benefits package which includes a non-contributory pension scheme, life assurance, concessions on company products and relocation assistance if required. To gain an even fuller picture of the scale of Scottish & Newcastle Breweries and the prospects available write or telephone:

Miss M. J. Gillanders, Personnel Manager,
Scottish & Newcastle Breweries plc,
Head Office, 111 Holyrood Road,
Edinburgh EH8 8YS. Telephone 031-556 2581.

Scottish & Newcastle Breweries plc

CAD/CAM

Our client is acknowledged as one of the pioneers in CAD/CAM technology.

An interesting opportunity exists for CAD/CAM **Systems Designers and Programmers** to join a small but expanding CAD group within the Management Services Department. The group consists of production and development teams working with Prime mini-computers.

Applicants should have at least three years experience of Fortran together with three years experience of CAD or Prime minis. Above all you should have sufficient skills to play a significant role in the development of new CAD Systems.

Salaries, terms, and conditions are all you would expect from a major engineering organisation, and a generous relocation package is available where appropriate.

For further details please contact our advising consultant Geoff King at the address below or telephone him on 0296 630506 in the evenings or at weekends.

CASTLE RECRUITMENT

ECL House, Park View Road, Berkhamsted, Herts. HP4 3EY
Phone: (04427) 74941

COMPUTER MANAGER IBM S/34

c. £12,500 **S.E. LONDON**

We are a successful and expanding company in the food industry and need a computer professional to establish and manage the installation of a System 34. This will prove an exciting opportunity for someone of proven ability who will be totally responsible for designing and implementing a range of systems which will eventually embrace all major commercial activities within the company. A thorough knowledge of RPG/IBM and the ability to effectively communicate at all levels is required. Benefits include private medical insurance, pension scheme and relocation allowance where necessary.

Please write with full C.V. details or telephone for an application form, Commercial Director, Hygrade Meats Ltd., Latona Road, London, SE15. Tel. 01-732 8711.

(0243)

COMMERCIAL INVENTORY SERVICE COMPANY LTD.

CIS is a computer bureau who provide a service to the automotive trade. Due to the imminent relocation of our offices from London to Leeds we require

SENIOR COMPUTER OPERATORS

for the Company's NCR CRITERION V8570. Applicants with at least two years' experience on NCR V series Hardware and VRX operating systems are asked to contact Miss K. Hewitt on **01-404 5982** for an application form.

(0273)

COMPUTER MEDIA

SALES OPPORTUNITIES

(Male or Female)

Norman Magnetics Ltd., the British Media Manufacturer are looking for Senior and Junior Sales People to sell in selected areas in many part of the UK.

SALARY – CAR – COMMISSION – PENSION SCHEME

Apply in writing to:

Meg Fitzgerald, Norman Magnetics Ltd., Invincible Road, Farnborough, Hants. GU14 7NP. Tel 0252 515066.

(0269)

EASTBOURNE BOROUGH COUNCIL, BOROUGH TREASURER'S DEPARTMENT

ANALYST – PROGRAMMER

Salary Range APS – SO2
£7371 – £8526 (National Pay award pending).

Eastbourne is a prestige South Coast holiday resort within easy reach of the Sussex Downs and Beachy Head. The Council's activities are unusually wide, and, in addition to all normal district functions, include a transport undertaking, farms, Highway's Agency, and extensive catering and entertainment facilities.

The above post offers an opportunity for a versatile conscientious person to participate in the development and enhancement of both batch and On-Line Systems, as a member of a small development team in a progressive computer installation.

The successful applicant will have the opportunity to utilize a mixed machine environment of ICL 2904, CMC Reality, and PDP 11/44 equipment. Programming languages include COBOL, BASIC and PLAN. Experience of at least two languages would be advantageous, but appropriate training will be given where necessary.

Conditions of service are good, and temporary housing accommodation and relocation expenses are available in appropriate cases.

Further information may be obtained from Mike Shipley, Computer Service Section, Tel. (0323) 21333, Ext. 332, and application forms from the Borough Treasurer, [illegible] BN21 4TW. Closing date 30th July, 1982.

(0248)

BRYMBO STEEL WORKS LIMITED

have a vacancy for a

PROCESS CONTROL ANALYST

THE JOB

- To lead a small team engaged in the application of Computer Control Systems to on-line production operations, involving not only the maintenance of existing systems but the necessary modifications, improvements and additions to the software of these systems as indicated by production requirements.
- The initial workload will centre on our 2 year old Billet Mill which has a central Computer linked to a series of micro-processors which control individual plant operations.
- The Company have also embarked on a policy which will see further application of computer control techniques to production processes.

THE IDEAL CANDIDATE

- Will be 30 to 40 years of age.
- Will have had some years of experience of, and direct involvement in, the application of process control systems to production operations, preferably, but not essentially, in the steel industry.
- Ideally will have had direct experience in the design and operation of software for controlling operations for rolling mills and, possibly, continuous casting machines.
- Will be able to work with production management and engineers of other disciplines in these areas.
- Will be able to demonstrate ability to achieve results in what is a demanding continuous process industry.

THE COMPANY

- Employs some 1,500 employees and is the leading and largest manufacturer of high carbon and low alloy forging steel billets in the U.K.
- Is located 12 miles south of Chester, one hour's travelling time from Liverpool and Manchester and within easy distance of both the Snowdonia National Park and the North Wales holiday resort area.

Please apply, giving full personal details and history to:
Personnel Manager,
Brymbo Steel Works Limited,
Brymbo, Wrexham, Clwyd, North Wales.
Telephone: Wrexham 756333

A Company application form can be obtained from Mrs B. Robinson, Secretary to the Personnel Manager.

GKN – Britain's largest international engineering group

ANALYST/PROGRAMMERS

CITY/O'SEAS **£EXCEPTIONAL**

Opportunities occur at various levels for persons with good BASIC, BASIC+ and/or C programming backgrounds to join a rapidly expanding International Systems House and Consultancy. Excellent careers are available in the development and enhancement of Banking Systems, Data Communications or Message Switching systems in London, America of the Middle/Far East. Applicants should have experience of DEC hardware and software knowledge which includes exposure to communications working. An attractive salary range, dependent on experience and location and reviewed at 6 monthly intervals is supplemented by a generous company benefits package. Ref C4016

ALL LEVELS

CENTRAL LONDON **to £12,000**

The London Insurance sector is currently the source of a number of opportunities for Systems and Programming Staff wishing for a change in the direction of their careers. We have identified a number of positions available to PROGRAMMERS, ANALYST PROGRAMMERS, DESIGNERS and SYSTEMS ANALYSTS with IBM programming backgrounds in COBOL, PL/1 or RPG. Exposure to on-line or Database systems will be an advantage but is not necessary in all cases. These are largely development positions and the companies involved all offer excellent facilities for advancement and benefits packages which in some cases include MORTGAGE arrangements. Ref R3803

SYSTEMS ANALYSTS

SURREY **c£12,000**

Two leading companies in the financial sector based in Surrey are actively looking for SYSTEMS ANALYSTS to assist with the development of sophisticated new systems on IBM equipment. Candidates will have had experience in designing and installing systems perhaps using structured methods in a banking, insurance or allied environment. The opportunities for advancement coupled with very generous benefits packages make these positions very attractive to already well-qualified people wishing for further development in their careers. MORTGAGE facilities are offered in both cases. Ref R3848/77

ANALYST/PROGRAMMERS

KENT **c£10,000+BENEFITS**

Insurance Company in South West Kent are embarking on a major expansion programme. For this reason they are looking for 2 ANALYST/PROGRAMMERS. The company utilises an IBM SYSTEM 38, therefore candidates would have a knowledge of IBM GSD equipment, and also RPG II or III expertise. There will be much development work, and the opportunity to alter, amend and improve existing systems. The two successful candidates will be key members of a new team, and will be offered excellent promotional prospects. The salary will be circa £10,000 pa with excellent insurance company benefits available, and a very pleasant environment in which to work, and perhaps live. Ref S4003

ANALYSTS & PROGRAMMERS

MIDDLESEX **£NEG**

Our client, heavily committed to the development and implementation of new financial systems involving both large ICL 2900 and new, advanced mini-computers is seeking Analysts and Programmers at all levels to join their teams. We would be particularly interested in hearing from persons with an ICL Systems and/or Programming background which has included either VME exposure or the use of mini-computers in a COBOL, BASIC or PLAN environment. These are excellent opportunities that involve a high degree of user contact, use of the very latest techniques and a good career path commanding a very attractive salary range. Ref C3976

VARIOUS LEVELS

LONDON/HOME COUNTIES **£HIGH**

We require ALL LEVELS of IBM GSD professionals to fill our current vacancies. These positions range from JUNIOR PROGRAMMERS to SENIOR SYSTEMS ANALYSTS, in a wide range of companies which include Banks, Software Houses, Insurance companies and Computer Bureaux. Therefore, if you would like a change of position, and a very wide range of options, then contact us for further details of these excellent opportunities. Ref S0001

TCR Targa Computer Recruitment
6 Liverpool Street London EC2M 7NH Telephone 01-283 9941 Telex 89-1858

Systems Analyst

IMI Titanium is Western Europe's leading manufacturer of titanium and titanium alloys.

There is now an opportunity for a Systems Analyst to join the Systems Development Section at our Waunarlwydd plant near Swansea.

The section uses computers for a range of applications including stock evaluation, order processing and invoicing, the preparation of wages and product costs/trading information. The successful applicant will be expected to lead and motivate a team involved in the development of programmes for new applications.

Candidates, male or female, should possess 3/5 years systems analysis or programming experience in a manufacturing industry, have received a good education in relevant subjects and be a good communicator at all levels.

This challenging position offers an attractive salary, a company pension scheme and employees profit sharing scheme.

Please telephone or write for an application form to:

Mr. L.F. Edkins,
Plant Personnel Manager,
IMI Titanium, P.O. Box 57,
Waunarlwydd,
Swansea SA1 1XD.
Tel: 0792 873471.

(8204)

IMI **IMI titanium**

CENTRAL REGIONAL COUNCIL

COMPUTER DEPARTMENT

OPERATIONS SUPPORT SUPERVISOR

Viewforth

Salary: AP III, £6,888 – £7,371

35 hours – 5 day week – Monday to Friday. Flexible Working Hours Scheme in accordance with the requirements of the Department.

The candidate must have proven experience in the areas of Network Control/Installation, IBM utilities, JCL and be capable of working with minimum supervision as part of a small team responsible for Operations Support within an IBM 3033S environment with both local and remote on-line locations. Knowledge of VM and MVS advantageous.

Applications in writing stating name, age, experience and qualifications to the Computer Manager, Central Regional Council, Viewforth, Stirling by 25 July 1982.

(8260)

IBM SYSTEM 38

COMPUTER SYSTEMS CONTROLLER

£10-12k p.a.

LOCATION MIDDLESEX

Our client, who provides services to the offshore oil industry, is installing an IBM System 38 in Hayes, Middlesex. They are seeking a Data Processing professional with good operations background to take complete charge of the installation.

Successful candidate must have in-depth knowledge of IBM System 34 or 38 hardware and software, management experience, and most important, be able to liaise diplomatically with outside clients.

For further information, please contact Anne Brouer on (01) 836 8885 or, if you prefer, write to her at:

PRESCOT COMPUTERS LIMITED
11/13 Brood Court
Covent Garden
London WC2B 5QN

(8262)

SENIOR SOFTWARE ENGINEERS

There's one major development project that will challenge your intellect and enhance your career

The world's most advanced telecommunications project

On the edge of London's Northern green belt, one of Britain's foremost high technology organisations is entering a crucial development phase of the world's most advanced telecommunications project. It is the most exciting chapter in a story of investment by STC in New Southgate — creating the facilities and environment to produce the most significant breakthrough in the fastest growth sector of high technology industry.

System X is a real watershed in telecommunications. No other digital communications system can match the sophistication of its computer-based architecture or its capacity to handle a staggering 700,000 user requests per hour. At the heart of the system is its unique software — enabling it to address the complex real-time demands upon a major telecommunications network. Despite the strides already taken in information technology it is these developments which will unlock the full potential for the "office of the future".

System X represents a quantum leap ahead to the convergence of microprocessor and telecommunications technology and will do more to challenge the intellect of the Software Engineers working on it than any other project this decade.

Our need is for Senior Real Time Software Engineers with a background in communications, defence or process control systems, aircraft simulation, signalling or similar real-time application.

Ideally, you should have at least ten years' experience and be capable of operating at a senior level. We are interested in those who wish to manage a significant software team and also in those who may prefer to contribute as technical specialists. Progression in our organisation is on a "dual ladder" basis where both managerial and technical contributions achieve equal recognition. You will be working within an established software department which is professionally led, and will grow and develop its role over the next few years.

We fully recognise the importance of these positions, and therefore are offering highly attractive salaries, comprehensive benefits and exceptional career prospects.

Find out more about the most exciting development project of the decade, by telephoning Roger Edmonds Brown on (01) 368 1234 ext. 2879 (answering service after office hours). If you prefer, write with full details of your experience to him at: Standard Telephones & Cables plc, Oakleigh Road South, New Southgate, London N11 1HB.

STC New Southgate
The communications development centre

Switzerland

Real Time Software for Process Control

Senior Software Engineers/Software Engineers

An expanding sub division of an Intarnational Company specialising in Process Control for Power Station Computer Systems and Energy Managament Control Systems seek additional Engineers for permanent careers on English speaking Projects in Switzerland.

The senior positions fall into four categorias and candidates should have relevant experienca to work on tha following areas:

Quality Assurance
- ★ Methods
- ★ Tools
- ★ Operating Systems
- ★ Programming Environment

Man Machine Communications
- ★ Display Systems
- ★ Plotters
- ★ Mimic Boards
- ★ Engineering Consoles

Communications Networks
- ★ X25
- ★ Decnet
- ★ Systems Architecture

Power Applications Systems
- ★ Electric Network
- ★ Closed Loop Control
- ★ SCADA

Software Engineers; we are looking for candidates to concentrate on establishing new standard Software. Successful candidates should have most of the following experience: A degree, 3/5 years' Real Time experience, PASCAL, CORAL, Assambler, VAX 7/80, PDP11, VMS, RSX11M and Indastrial Systems. CW28/1

English Speaking Project

Telecommunications Software Development

We have been retainad by an international telecommunications company to recruit several SOFTWARE ENGINEERS to devalop and implement software for a NEW PUBLIC DATA SWITCHING SYSTEM, involving working on Operating Systems, Diagnostics, Telex applications and X25 interfaces.

Candidatas should have a degrae, 18 months plus Assembler experience, preferably in a Telecommunications anvironmant on minicomputers. An in-depth knowledge of Real Time Operating Systems would be advantageous.

Successful Candidatas may look forward to anhancing their career prospects, gaining valuable experienca in an International environment. CW28/2

Intarviews will take place in London later this summer. For further details on the above two companies, conditions of employment and living in Switzerland. Please send C.V. or write for application form quoting the raferanca number.

APRIL Advertising
5 Brighton Road Surbiton Surrey KT6 5LX

SMR
Sales & Marketing Recruiters Ltd
A Sales and Marketing Services Company

SALES EXECUTIVES

Refresh The Parts Of Your Potential That Your Present Employer Cannot Reach!

There is a lot of uncertainly in the computer industry at the present time. Many of the giants of the computer establishment are reorganising and rationalising in the hope of getting in tune with market realities, whilst a myriad of entrepreneurial upstarts euphorically attempt to get an act together with "cloned" micros and panacee software. Neither is a situation that implies present security or future satisfaction for sales people.

Our client is one of the big International success stories of the computer industry with a considerable reputation for innovation and quality and a turnover rapidly moving towards £1 billion. Their product range extends from large computer systems to micros embracing among other things, DDP and small business systems. They are a large, secure and fast expanding organisation that manages to maintain all the benefits of a small company environment. Substantial new products come along with astounding regularity and everything points towards a very exciting and successful future.

The company's next phase of expansion calls for the recruitment of experienced computer people who have a substantial record of success in selling computer systems to industry and commercial end-users as well as major systems houses in

LONDON and the SOUTH
THE MIDLANDS
NORTHERN ENGLAND

All new recruits will enjoy the benefit of initial training in the USA as well as a generous income package which provides a substantial long term minimum income guarantee and on-target earnings in 1982/3 of up to

£20,000 + COMPANY CAR

Please supply complete career details to Alasdair [illegible] or Peter Hubble (01-734 9776), or Alan Williams (05432 56612), quoting reference SB/072.

[illegible]

LONDON & SOUTH
29 Oxford Street
London W1. (01) 734 9776

MIDLANDS & NORTH
39 Bore Street, Lichfield
Staffs. (05432) 56612

Answering Service after 6 pm and weekends
SALES TRAINING. MARKET RESEARCH. RECRUITMENT

COMPUTER MANAGER

Salary negotiable £9,000-£10,000

Company car provided plus excellent benefits package

Based: West London

Installation: DEC PDP11/24 under RSTS.

Applications: material control, accounting, payroll. The company is growing rapidly and further applications are likely.

Our client has retained us to recruit a Manager who will run their computer department, will assist in planning and will take part in future development of their systems.

The job includes:
- ★ Day to day administration of operations.
- ★ Co-ordination with users.
- ★ Budgeting and planning of future capacity.
- ★ Some system design and program development.

Our client needs a manager with a good technical background. This should include knowledge of DEC RSTS, some experience of programming in BASIC and a general understanding of commercial accounting.

Please apply to us in the first instance as the company's advisers. You should send your c.v. to T. Williams, Roots & Williams Associates, 17 Wilson Street, London EC2.

[illegible]

SALES PROFESSIONALS - £35K

BASIC £9K - £12.5½
TARGET EARNINGS UP TO £35K
HIGH GUARANTEE, CAR, ETC., ETC.

Our client, a major manufacturer, is currently seeking salespeople in the following categories:

NEW BUSINESS SALES. Good education, a good record in selling business equipment, and a sound knowledge of commercial applications are required.

COMPETITIVE SALES. You must already be a Mini- or Mainframe salesperson with a first-class trade record and an in-depth knowledge of competition.

STRATEGIC ACCOUNT SALES. As above but preferably with the additional experience of selling to major accounts.

Please telephone Camberley (0276) 32888 (office hours) or Farnborough (0252) 516976, evenings and weekends.

CCAB
COMPUTER CONSUMER ADVICE BUREAU LTD.
Computer and Recruitment Consultants
5 Grade Lane, Blackwater, Near Camberley, Surrey

[illegible]

FOR
CLASSIFIED
ADVERTISING USE

DIRECT LINE
01-661 0121

SALES BIT

Quality of Management—18

So you want to change your boss?

WHILE most managers who visit us at Sales and Marketing Recruiters do so with the firm intention of obtaining a job with a new employer, many come along merely to discuss their career in terms of where they might go next.

Of the many different conversations we have in this context, two in particular are recurrent: "I wish to change both my employer and my occupational discipline" and "I would really like to set up my own business, but I have yet to think of an original idea or discover an unsatisfied demand." These are both apparently reasonable requests that stem from limited business experience and a lack of logical consideration for the total implications of such requirements.

The most common examples are technicians wanting to get into selling, salesmen seeking to secure management status by moving in another company, and managers attempting to advance to a high level of responsibility by the same means.

This is a completely unreasonable expectation. When a company goes outside its own ranks for personnel, it does so to obtain skills that are wholly or partially absent from its own organisation.

No company can afford the risk of employing a stranger unless his skills and capability are already an established fact. If the need was merely that of potential, then there is little doubt that such people are already in the company's employment. The problems are time and risk. The duration and therefore cost, of waiting for someone to gain fluency in a new discipline, as well as getting to know the product, the company, the market, etc, is too much even to contemplate.

For those who are determined to advance their status by moving companies, there is likely to be only one possibility, and that is to move a long way "down market" in terms of company size and stature. Many very small companies are prepared to use the influence of status to attract people from large companies. A district sales manager for a major computer manufacturer may be just the man for a small turnkey systems house which needs a sales and marketing director, even though his complement of subordinates may decline from a significant number to one – including himself!

More often than not, people who wish to change occupational discipline or increase status by way of changing company, do so for reasons of frustration and disillusion within their present employment. They can see no way of progressing within their present company, and out of sheer desperation decide to move in order to achieve their objectives. In many cases, this is the only available course; the mistake is in expecting the change of employer to bring about an instant solution to the career "blockage".

Without any doubt, the best way and the best chances of advancing status and responsibility or changing job function, exist within one's present company. If all attempts – rather than assumptions! – to progress make it clear that there are no real opportunities to pursue one's aspiration, then the best alternative is to move. However, it only makes sense if such a move is "sideways" into another company where the new job can be tackled with confidence, using existing skills and experience to achieve early success.

Of course, it is essential to establish at the interview stage that real potential exists for promotion into the kind of job you wish to pursue. If subsequent employment does not lead to the satisfaction of your aspirations, you have either chosen the wrong company, or you never really had the talent in the first place.

Setting up your own business is an altogether different affair and many books have been written on the multifarious ramifications of such a venture.

I suspect that most people who say they would like to set up their own business if only they had an original idea, or if only they could obtain the finance, do so merely for effect. It is as if they feel obliged to project an entrepreneurial image and create the impression that they have the drive, talent, enthusiasm and courage to go beyond the foetal position of being an employee, if only their fates were not against them. The fact is, one does not need an original idea to set up a new business and there is never a shortage of financial backing for a sound business proposition. There are innumerable examples from fish and chip shops to the whole of Japanese industry, which make it abundantly clear that originality can be a positive disadvantage.

The most difficult thing about setting up your own business is merely the act of starting out, and my simple, yet deceptively obvious advice for those who are determined to go it alone, but are unsure of what they should do, is simply to do what you do best in the industry you know best.

Alan Williams

PUZZLE ANSWER